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Forest Statistics for Northeast Oklahoma Counties-I 993

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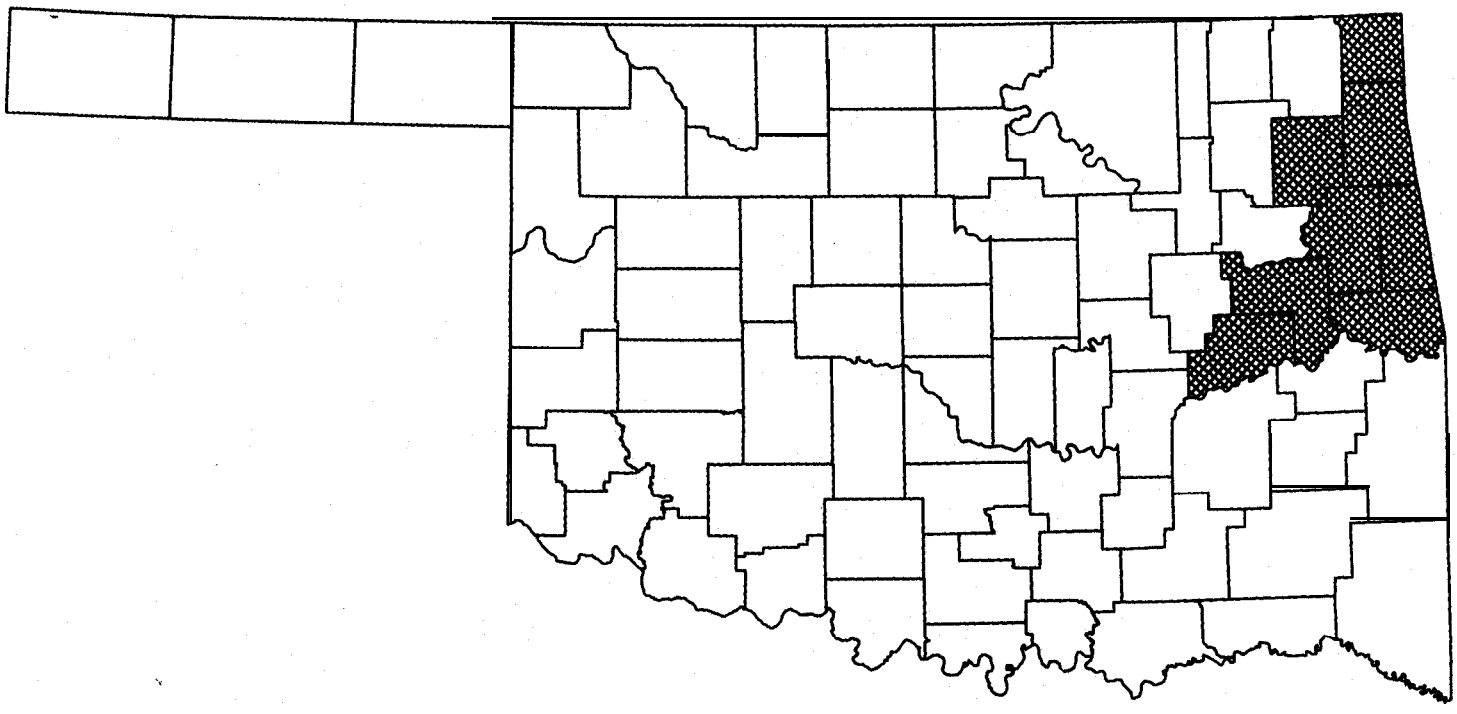

FOREWORD

The USDA-Forest Service, Southern Forest Experiment Station, Forest Inventory and Analysis unit **(SO-FIA),** conducts forest inventories covering the States of Alabama, Arkansas, Louisiana, Mississippi, east Oklahoma, Tennessee, and east Texas and the Commonwealth of Puerto Rico.

The **SO-FIA** forest inventories are part of a nationwide effort originally authorized by the **McSweeney–McNary** Act of 1928. More recent legislation pertinent to the **SO-FIA** mission includes the Forest and Rangeland Renewable Resources Planning Act of 1974 and the Forest and **Rangeland Renewable** Resources Research Act of 1978. The **SO-FIA** mission is to develop, analyze, and maintain forest resource information that is essential for formulation of forest policies and programs.

ACKNOWLEDGMENTS

The SOFIA gratefully acknowledges the cooperation and excellent assistance provided by the Oklahoma Division of Forestry.

The following members of the SOFIA staff completed the field measurements:

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*Core tables are presented in response to the Southern Industrial Forestry Research Council's recommendations. These tables are identical among Forest Inventory and Analysis units in the eastern United States.

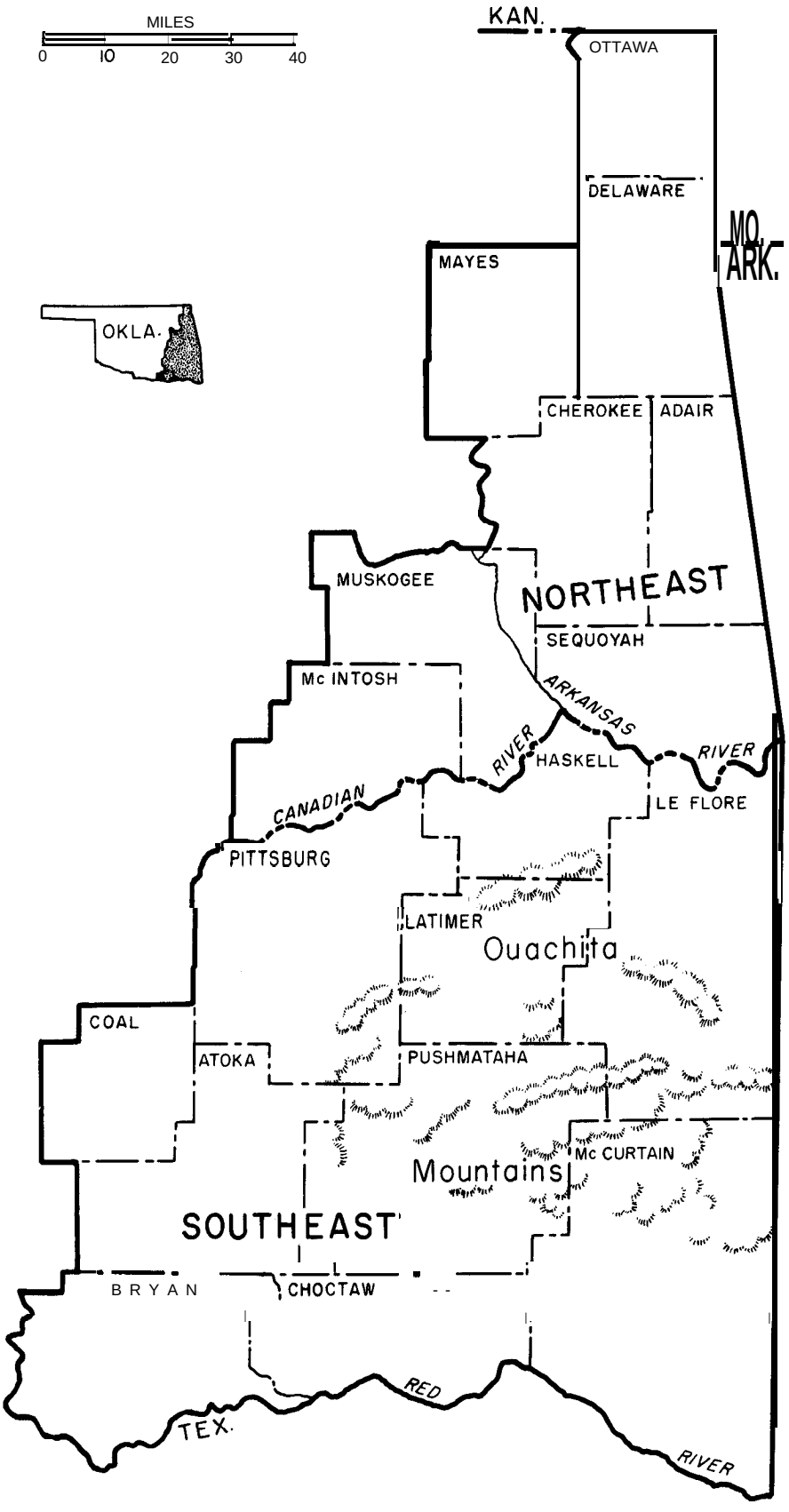

Figure I.-Forest survey *regions in Oklahoma.*

Forest Statistics for Northeast Oklahoma Counties-1993

Peter A. Franco, Patrick E. Miller, and Andrew J. Hartsell

INTRODUCTION

Tabulated results were derived from data obtained during the 1993 forest inventory of northeast Oklahoma counties (fig. I). Fieldwork for the northeastern unit was completed in late 1992. Core tables (1 through 25) are compatible among Forest Inventory and Analysis units in the Eastern United States. Supplemental tables (26 through 43) provide information beyond that provided by the core tables. Comparisons are made between results of the 1993 inventory and previous inventories conducted in 1986 and 1976.

METHODS

The Southern Forest Experiment Station, Forest Inventory and Analysis unit (SOFIA) uses a two-phase sample of temporary aerial-photo points and a systematic grid of permanent ground plots. The area of forested land was determined by photointerpretation of temporary points and field checks of permanent plots. Field measurements were conducted on a subset of permanent plots spaced 3 miles apart. Trees were measured on plots that were forested at the time of the current inventory or were forested at the time of the previous inventory.

Each plot consisted of 10 satellite points spread over about 1 acre. At each point, trees 5.0 inches in diameter at breast height (d.b.h.) and larger were selected for measurement on a variable-radius plot defined by a 37.5factor prism. Thus each tree selected with the prism represented 3.75 square feet of basal area per acre. Trees from 1 .O to 4.9 inches in d.b.h. were tallied on a 1/275-acre fixed plot at each of the first three points and at any remaining points where fewer than two trees 5.0 inches in d.b.h. or larger were tallied. If no trees greater than 1 .0 inch were tallied at a point, then seedlings were tallied. Several plot-level measurements relating to timber and other forest resources were also collected.

Tree data were used to estimate volumes, basal area, number of trees, and other plot-level variables. Ownership information was obtained for each measurement plot using tax records and other sources. Plot-level estimates were expanded using county-level factors derived as part of the forest area determination.

Over successive inventories, techniques have evolved so that some changes have been instituted. In recent inventories these changes have been mostly minor in scale and have been instituted because of the availability of better methods or to achieve greater compatibility among Forest Inventory and Analysis units. These changes may, in some cases, affect the ability to discern minor shifts in resource trends.

The major change affecting the 1993 inventory is the modified tree classification system that has been in effect since the 1988 inventory of Arkansas. Tree grade 5 is used to designate trees capable of producing at least one 12-foot log or two 8-foot logs in the sawlog portion, but not capable of producing a gradable 12-foot log in the butt 16-foot section. These trees-formerly classed as rough or rotten culls-are now included in growing stock. In previous States where this revision has been in effect, these trees have increased softwood growing-stock volume 1 to 2 percent, and hardwood 6 to 8 percent. Comparisons of current inventory with previous estimates of growing stock are based on data that has been reprocessed to account for the change in definition as far as possible.

Another change affecting the classification of growing-stock trees is the requirement that at least one-third of the sawlog volume (or prospective volume, in the case of smaller-than-sawtimber size trees) has to be utilizable. Previously, one-half the volume had to be utilizable. In the previous States where this revision in utilizable volume has been in effect, few trees have been affected.

Because of the revised definitions, and to better assess trends, analysis of trends in inventory volume, growth, removals, and mortality will focus on live trees.

STATISTICAL RELIABILITY

The sampling methods were designed to achieve suitable sampling errors for estimates of area and volume at the State level. Sampling error increases as the area or volume considered decreases. The sampling errors presented in table I are equal to one standard deviation for the sample estimates and may be used to compute confidence intervals for population data.

As an example, the 95-percent confidence interval for growing-stock volume in northeast Oklahoma counties is computed as follows:

$$688.1 \pm 1.96(0.060 \times 688.1) = 688.1 \pm 80.9$$

where 1.96 is the number of standard deviations. The 95-percent confidence interval is thus 607.2 to 769.0 million cubic feet. This interval captures the true growing-stock inventory volume for the region unless a l-in-20 chance of a random event has occurred.

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Table *L-Sampling errors* for timberland, live trees, growing stock, and sawtimber, northeast Oklahoma counties, 1993*

County	Timberland	Live trees			Growing stock			Sawtimber volume
		Volume	Growth	Removals	Volume	Growth	Removals	
	Percent							
Adair	2.0	9.3	28.4	41.5	14.5	†	42.2	18.0
Cherokee	3.3	10.7	14.7	41.0	13.8	19.0	42.9	20.7
Delaware	2.3	10.3	15.2	45.9	14.2	19.0	†	21.6
McIntosh	3.3	13.3	†	†	20.3	†	†	35.1
Mayes	1.9	11.1	10.8	†	14.5	14.0	†	18.0
Muskogee	3.4	10.9	11.4	†	13.3	12.9	†	20.7
Ottawa	2.2	21.7	36.2	†	26.0	25.9	†	44.0
Sequoyah	2.9	8.6	17.1	†	10.8	19.5	†	19.3
All counties	1.0	4.6	8.0	24.4	6.0	10.3	25.1	9.0

*By random-sampling formula.
†Sampling error greater than 50.

The results are reported for individual counties, thereby allowing computation of statistical confidence for any combination of counties. Values for individual counties are subject to high sampling errors; users are cautioned about using data for single counties. Sampling error may be estimated for any group of counties by the following formula:

For example, the estimate of sampling error for growing-stock volume in Adair, Cherokee, Muskogee, and Sequoyah Counties is computed as:

$$SE_g = SE_t \frac{\sqrt{X_t}}{\sqrt{X_g}}$$

where

SE_g = standard error of estimate (expressed as a percent) for the group of counties desired
SE_t = standard error of estimate (expressed as a percent) for the unit
X_g = sum of values for the variable of interest (area or volume) for group of counties to be combined
X_t = total area or volume for the unit.

For example, the estimate of sampling error for growing-stock volume in Adair, Cherokee, Muskogee, and Sequoyah Counties is computed as:

$$SE_g = 6.0 \frac{\sqrt{688.1}}{\sqrt{461.0}} = 7.3$$

Thus, the sampling error is 7.3 percent and the resulting 95-percent confidence interval for growing-stock volume in the four-county area is 461.0 ± 66.0 million cubic feet.

HIGHLIGHTS

Area

The northeastern region of Oklahoma has experienced a 4 percent increase in forest land since 1986. The region is now 43 percent forested, with over 90 percent of the 1,455,900 forested acres classified as timberland. Woodland acreage has decreased slightly to 114,700 acres, and there is no reserved timberland. A 5 percent increase in timberland to 1,33 1.200 acres is the result of additions from cropland and pasture and a reclassification of some forest land from woodland to timberland.

Almost 90 percent of the timberland in northeast Oklahoma is in private ownership. Publicly owned timberland fell 12 percent to 144,900 thousand acres, while the nonindustrial private sector boosted its ownership by 8 percent to 1,186,300 acres. Farmers and other individuals continue to be the two single largest ownership groups, together owning 78 percent of all timberland.

The oak-hickory forest type continues to dominate northeast Oklahoma, covering 87 percent of the timberland. This forest type has remained relatively stable, showing only a 5 percent increase over the past 6 years. Changes in other forest types show divergent trends and indicate a transition from forest types of pine composition to those of hardwood composition. Timberland occupied by the oak-pine type has declined 34 percent to 25,200 acres. The bottomland hardwood forest types have accrued 28,400 acres, a 34 percent increase, over the previous period. This increase in bottomland forest types to over 120,900 acres is mostly due to a 60 percent increase in the elm–ash–cottonwood type.

The most significant change in timberland acreage by stand size is the increase in sawtimber stands. These have increased by 18 percent since 1986 and now account for 37 percent of timberland acreage. Also notable is a 12 percent decrease in sapling-seedling stands to 367,300 acres. Poletimber stands increased by 9 percent and currently occupy about one-third of the timberland.

Table II.—*Components of annual change in the volume* of live trees by inventory period andspecies *group,* northeast *Oklahoma* counties, *1993*

Inventory period and species group	Gross growth	Mortality	Removals
	Net growth		
	Million cubic feet		
1976 to 1985			
Softwoods	2.2	0.1	3.5
Hardwoods	22.8	12.2	10.0
Total	25.0	12.3	13.5
1986 to 1993			
Softwoods	2.6	0.3	2.1
Hardwoods	30.9	10.1	11.2
Total	33.6	10.4	13.3

Stand structure

The total number of live trees (including sapling-size trees) is up 12 percent since the 1986 survey. Trees in the 2-inch and 4-inch diameter classes account for 65 and 81 percent of the live softwood and hardwood inventories, respectively. A notable change is an almost two-thirds reduction in the number of softwoods in the 2-inch diameter class.

The number of live merchantable-size trees has increased by 11 percent. Both softwoods and hardwoods show appreciable increases of 29 and 10 percent, respectively. However, softwoods comprise only 5 percent of all live merchantable-size trees. The number of merchantable-size softwoods has increased in all but the 12-inch diameter class. The increase in merchantable-size hardwoods is across all diameter classes, but is most pronounced in the larger classes.

The most notable changes in the number of trees by size class are seen for softwood poletimber-size trees and hardwood sawtimber-size trees. Poletimber-size softwoods increased by 49 percent, while sawtimber-size hardwoods increased by 19 percent. In contrast to the increase for sawtimber-size hardwoods, the sawtimber-size softwoods showed a very slight decrease of 1 percent.

Hardwood basal area increased by 8 percent. The increase in softwood basal area was negligible. Average basal area is 72.5 square feet per acre with 96 percent of this being hardwood.

Inventory

Softwood live-tree volume has increased 12 percent since 1986. Most of this change is attributable to shortleafpine. Redcedar also showed a marked increase, but remains a minor component of the inventory.

Hardwood live-tree volume showed a substantial 25 percent increase. Oaks, particularly red oaks, and hickories accounted for most of this change, boosting the total live-tree inventory to over 1 billion cubic feet. Other species showing appreciable increases are the elms and ashes.

The average acre in northeast Oklahoma has 775 cubic feet of live-tree volume, with 95 percent of this being hardwood.

Components of change

Live-tree net annual growth for the 19861993 period averaged 25 cubic feet per acre per year, a 28 percent increase over that reported for the previous survey period. Hardwoods accounted for 92 percent of this increase. On all timberland, hardwood net growth increased 36 percent, while softwood growth increased 18 percent. This sharp increase in hardwood growth is partly due to an accretion in the number of live hardwood trees for all diameter classes, particularly the larger diameter classes. Current net growth of hardwoods is 23 cubic feet per acre per year averaged over all timberland, compared to 2 cubic feet per acre per year for softwoods.

Average annual removals of live trees showed little change over the previous period. There was a 40 percent drop in live softwood removals to the current level of 2.1 million cubic feet. This was offset by a 10 percent increase in live hardwood removals.

Average annual mortality of live softwood trees jumped sharply from 100,000 to 300,000 cubic feet over the previous period. For hardwood trees, this figure decreased by 17 percent, effecting an overall 15 percent drop in average annual live-tree mortality.

Figures for this survey period show net growth to exceed removals for both softwoods and hardwoods, indicating an increasing inventory. Currently, hardwood net growth volume is almost three times greater than removal volume. The softwood inventory, changing at an average rate of half a million cubic feet per year, is on an upswing following the 1976-1985 period when removals exceeded net growth. The hardwood inventory's average annual change is 19.7 million cubic feet, compared to 12.8 million cubic feet for the prior period. This suggests that northeast Oklahoma's hardwood inventory is not only increasing but doing so at an increasing rate.

APPENDIX

Definition of Terms

Dimension Classes of Trees

Poletimber trees--Softwoods 5.0 inches to 8.9 inches in diameter at breast height (d.b.h.) and hardwoods 5.0 to 10.9 inches in d.b.h.

Rough, rotten, andsalvable dead trees-See "tree classes." Saplings-Trees 1.0 inches to 4.9 inches in d.b.h.

Sawtimber trees-Trees 9.0 inches and larger in d.b.h. for softwoods, and 11 .O inches and larger for hardwoods.

Seedlings-Trees less than 1.0 inch in d.b.h. and greater than 1 foot tall for hardwoods, greater than 6 inches tall for softwoods, and greater than 0.5 inch in diameter at ground level for **longleaf** pine.

Forest Land Classes

Forest land-Land at least **16.7-percent** stocked by forest trees of any size, or formerly having such tree cover, and not currently developed for nonforest uses. Minimum area considered for classification is 1 acre. Forest land is divided into timberland, reserved timberland, and woodland.

Reserved timberland-Productive public forest land withdrawn from timber utilization through statute or administrative regulations.

Timberland-Forest land that is producing or is capable of producing, crops of industrial wood and not withdrawn from timber utilization. Timberland is synonymous with "commercial forest land" in prior reports.

Woodland-Forest land incapable of yielding crops of industrial wood because of adverse site conditions.

Forest Types

Elm-ash-cottonwood-Forests in which elms, ashes, or cottonwoods, singly or in combination, comprise a plurality of the stocking. Common associates include willows, sycamore, American beech, and maples.

Loblolly-shortleaf pine-Forest in which pines (except **longleaf** and slash pine) and eastern redcedar, singly or in combination, comprise a plurality of the stocking. Common associates include oaks, hickories, and gums.

Longleaf-slash pine-Forests in which **longleaf** or slash pine, singly or in combination, comprise a plurality of the stocking. Common associates include other southern pines, oaks, and gums.

Nontyped—**Timberland** currently unoccupied by any live trees or seedlings; for example, very recent **clearcut** areas.

Oak-gum-cypress-Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprise a plurality of the stocking except where pines comprise 25 to 49 percent, in which case the stand would be classified oak-pine. Common associates include cottonwoods, willows, ashes, elms, hackberry, and maples.

Oak–hickory—**Forests** in which upland oaks or hickories, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 49 percent, in which case the stand would be classified oak-pine. Common associates include yellow-poplar, elms, maples, and black walnut.

Oak-pine-Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking, but in which softwoods, except cypress, comprise 25 to 49 percent of the stocking. Common associates include gums, hickories, and yellow-poplar.

Growth Classes

Gross growth—**Total** increase in stand volume computed on growing-stock trees or live trees at least 5.0 inches in d.b.h. Gross growth equals survivor growth, plus ingrowth, plus growth on removals, plus growth on mortality, plus cull increment (for growing stock computations). Gross growth includes mortality.

Net change-Increase or decrease in stand volume computed on growing-stock trees or live trees at least 5.0 inches in d.b.h. Net change is equal to net growth minus removals.

Net growth-Increase in stand volume computed on growing-stock trees or live trees at least 5.0 inches in d.b.h. Net growth is equal to gross growth minus mortality.

Miellaneous Definitions

Average annual mortality-Average annual sound-wood volume of growing-stock or live trees dying from natural causes for the intersurvey period.

Average annual removals-Average net annual volume of growing-stock or live trees removed from the inventory by harvesting, cultural operations (such as timber-stand improvement), land clearing, or changes in land use for the intersurvey period.

Average net annual growth-Average net annual volume increase of growing-stock or live trees for the intersurvey period.

Basal area-The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed in square feet per acre.

Cull increment-The change in growing-stock volume due to growing-stock, rough, or rotten trees changing tree class between surveys.

D. b. h. (diameter at breast height)-Tree diameter in inches, outside bark, usually measured at 4.5 feet above ground.

Diameter classes-The **2-inch** diameter classes extend from 1.0 inch below to 0.9 inch above the stated midpoint. Thus, the **12-inch** class includes trees 11.0 inches through 12.9 inches in **d.b.h.**

D.o.b. (diameter outside bark)--Stem diameter including bark.

Log grades-A classification of logs based on external characteristics as indicators of quality or value.

Mortality-Number or sound-wood volume of **growing-**stock trees or live trees dying from natural causes during a specified period.

***Natural stands*—Stands** with no evidence of artificial regeneration. This includes those stands established by seed-tree regeneration methods.

Plantations-Planted or artificially seeded stands.

Removals-The net volume of growing-stock or live trees removed from the inventory by harvesting, cultural operations (such as timber stand improvement), land clearing, or changes in land use.

***Sawlog portion*—That** portion of the bole of a sawtimber tree between a l-foot stump and the **sawlog** top.

Sawlog top-The point on the bole of a sawtimber tree above which a **sawlog** cannot be produced. The minimum **sawlog** top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

***Select red oaks*—A** group of several red oak species composed of cherrybark, Shumard, and northern red oaks. Other red oak species are included in the "other red oaks" group.

***Select white oaks*—A** group of several white oak species composed of white, swamp chestnut, swamp white, chinkapin, Durand, and bur oaks. Other white oak species are included in the "other white oaks" group.

Site class-A classification of forest land in terms of potential capacity to grow crops of industrial wood.

Tree grade-A classification of the **sawlog** portion of **sawtimber** trees based on: (1) the grade of the butt log or (2) the ability to produce at least one **12-foot** or two **8-foot** logs in the upper section of the **sawlog** portion.

Upper-stem portion-That part of the main stem of a **sawtimber** tree above the **sawlog** top to a diameter outside bark of 4.0 inches or to the point where the main stem breaks into limbs.

Ownership Classes

Farmer–owned land-Lands operated as a unit of 10 acres or more and from which the sale of agricultural products totals $1,000 or more annually.

Forest industry land-Lands owned by companies or individuals operating wood-using plants (either primary or **secondary**).

National forest land--Federal lands that have been legally designated as national forests or purchase units and other lands under the administration of the Forest Service, including experimental areas.

Nonindustrial private land (corporate)-Lands privately owned by private corporations other than forest industries and incorporated farms.

Nonindustrial private land (individual)-Lands privately owned by individuals other than forest industries or farmers.

Other Federal land--Federal lands other than National Forests.

State, county, andmunicipal land-Lands owned by States, counties, and local public agencies or municipalities or lands leased to these governmental units for 50 years or more.

Stand-size Classes

***Nonscocked stands*—Stands** less than 16.7 percent stocked with live trees.

***Poletimber stands*—Stands** at least 16.7 percent stocked with live trees, with half or more of this stocking in sawtimber or poletimber trees. and with poletimber stocking exceeding that of sawtimber stocking.

Sapling-seedling stands-Stands at least 16.7 percent stocked with live trees, with more than half of this stocking in saplings or seedlings.

***Sawtimber stands*—Stands** at least 16.7 percent stocked with live trees, with half or more of this stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Stocking

Stocking is a measure of the extent to which the growth potential of the site is utilized by trees or preempted by vegetative cover. Stocking is determined by comparing the stand density in terms of number of trees or basal area with a specified standard. Therefore, full stocking is 100 percent of the stocking standard.

The tabulation below shows the density standard in terms of trees per acre by size class required for full stocking.

D.b.h. *(Inches)*	Number of trees	D.b.h. *(Inches)*	Number of trees
Seedlings	600	16	72
2	560	18	60
4	460	20	51
6	340	22	42
8	240	24	36
10	155	26	31
12	115	28	27
14	90	30	24

Arbitrarily defined stocking categories are defined as follows.

Optimally stocked-Stands 61 to 100 percent stocked with growing-stock trees. These stands are growing toward a fully stocked condition (ideal space required for each tree increases with age). Optimum growth and bole form occur in this range.

***Overstocked*—Stands** greater than 100 percent stocked with growing-stock trees. These stands will become stagnant with mortality of individuals increasing as stocking increases over 100 percent.

Understocked-Stands 0 to 60 percent stocked with growing-stock trees. These stands will take a very long time to reach full stocking. Meanwhile, poor bole form will result, and much of the productivity will be placed on heavy limbs instead of on the bole.

Tree Classes

Commercial species-Tree species currently or potentially suitable for industrial wood products.

Cull trees-Rough or rotten trees.

Growing-stock trees-Living trees of commercial species classified as sawtimber, poletimber, saplings, and seedlings. Trees must contain at least one **12-foot** or two **8-foot** logs in the

sawlog portion currently or potentially (if too small to qualify) to be classed as growing stock. The log(s) must meet dimension and merchantability standards to qualify. Trees must also have currently or potentially one-third of the gross board-foot volume in sound wood.

Hardwoods-Dicotyledonous trees, usually broad leaved and deciduous.

Live trees-All trees that are alive. Included are all size classes, all tree classes, and both commercial and noncommercial species.

Noncommercial species-Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial wood products.

Rotten trees-Live trees of commercial species that are unmerchantable for **sawlogs** currently or potentially because of rot deduction in the **sawlog** section. See definition of **growing-**stock trees.

Rough trees-Live trees of commercial species that are unmerchantable for **sawlogs** currently or potentially because of roughness or poor form in the **sawlog** section. Also included are all live trees of noncommercial species. See definition of growing-stock trees.

Salvable dead trees-Standing or downed dead trees that were formerly growing stock and are considered merchantable. Trees must be at least 5.0 inches in **d.b.h.** to qualify.

***Softwoods*—Coniferous** trees, usually evergreen, having leaves that are needles or scalelike.

Volume

Volume of ***cull*—The** cubic-foot volume of sound wood in rough and rotten trees at least 5.0 inches in d.b.h. from a l-foot stump to a minimum **4.0-inch** top d.o.b. of the central stem or to the point where the central stem breaks into limbs.

Volume ***of growing stock-The*** cubic-foot volume of sound wood in growing-stock trees at least 5.0 inches in d.b.h. from a l-foot stump to a minimum **4.0-inch** top d.o.b. of the central stem or to the point where the central stem breaks into limbs.

Volume ***of live trees-The*** cubic-foot volume of sound wood in growing-stock, rough, and rotten trees at least 5.0 inches in d.b.h. from a l-foot stump to a minimum **4.0-inch** top d.o.b. of the central stem or to the point where the central stem breaks into limbs.

Volume of sawlog portion of sawtimber trees--The **cubic-**foot volume of sound wood in the **sawlog** portion of sawtimber trees. Volume is net of deductions for rot, sweep, and other defects that affect use for lumber.

Volume ***of sawtimber-The*** board-foot volume **(Interna-**tional **1/4-inch** Rule) of sound wood in the **sawlog** portion of sawtimber trees. Volume is net of deductions **for rot,** sweep, and other defects that affect use for lumber.

Volume of timber-The cubic-foot volume of sound wood in growing-stock, rough, rotten, and salvable dead trees at least 5.0 inches in d.b.h. from a 1 -foot stump to a minimum **4.0-inch** top d.o.b. of the central stem or to the point where the central stem breaks into limbs.

Table 1 .—*Area by county and land class, northeast Oklahoma counties, 1993*

county	All land*	Forest land				Nonforest land
		Total	Timberland	Woodland	Reserved timberland	
	Thousand acres					
Adair	369.1	227.2	227.2	...	...	141.9
Cherokee	479.0	294.3	260.8	33.4	...	184.7
Delaware	461.0	214.2	214.2	...	...	246.8
McIntosh	383.5	162.4	136.4	26.0	...	221.1
Mayes	411.9	125.2	125.2	...	...	286.7
Muskogee	521.3	144.5	107.0	37.5	...	376.8
Ottawa	297.6	46.7	46.7	...	...	250.8
sequoyah	433.9	231.4	213.6	17.8	...	202.5
All counties	3.357.2	1,445.9	1,331.2	114.7	...	1,911.3

*From the U.S. Bureau of the Census.

Table *2.-Area of timberland by county and ownership class, northeast Oklahoma counties, 1993*

county	All Ownerships	National forest	Misc. federal	State	County and municipal	Forest industry*	Farmer	Corporate†	Individual+
	Thousand acres								
Adair	227.2	...	...	...	7.6	...	60.6	15.1	143.9
Cherokee	260.8	...	6.7	26.8	...	...	160.5	6.7	60.2
Delaware	214.2	...	...	6.7	13.4	...	107.1	46.9	40.2
McIntosh	136.4	...	13.0	...	...	...	13.0	19.5	91.0
Mayes	125.2	...	13.9	7.0	...	...	...	20.9	83.5
Muskogee	107.0	...	32.1	...	...	...	26.8	10.7	37.5
Ottawa	46.7	...	...	...	...	...	29.7	4.2	12.7
sequoyah	213.6	...	17.8	...	...	...	65.3	23.7	106.8
All counties	1,331.2	...	83.5	40.4	21.0	...	462.9	147.7	575.7

*Includes land leased to forest industry.
†Indian land will be classed as corporate or individual as defined by the Bureau of Indian Affairs.

Table *3.-Area of timberland by county and forest type group, northeast Oklahoma counties, 1993*

County	Total	Forest type group					
		Loblolly–shortleaf pine		Oak–pine	Oak–hickory	Oak–gum–cypress	Elm–ash–cottonwood
		Planted	Natural				
	Thousand acres						
Adair	227.2	...	7.6	...	219.6	...	...
Cherokee	260.8	...	6.7	6.7	227.4	13.4	6.7
Delaware	214.2	...	...	6.7	207.5	...	...
McIntosh	136.4	...	...	...	84.5	19.5	32.5
Mayes	125.2	...	7.0	...	104.4	13.9	...
Muskogee	107.0	...	...	...	101.7	5.4	...
Ottawa	46.7	...	...	...	46.7	...	...
Sequoyab	213.6	...	...	11.9	172.0	17.8	11.9
All counties	1,331.2	...	21.2	25.2	1,163.8	69.9	51.0

Table *4.-Area of timberland by county and stand-size class, northeast Oklahoma counties, 1993*

County	All classes	Stand-size class			Nonstocked areas
		Sawtimber	Poletimber	Sapling-seeding	
	Thousand acres				
Adair	227.2	128.7	60.6	*37.9*	…
Cherokee	260.8	86.9	80.3	*93.6*	…
Delaware	214.2	73.6	60.3	80.3	…
McIntosh	136.4	45.5	65.0	26.0	…
Mayes	125.2	69.6	41.7	13.9	…
Muskogee	107.0	26.8	58.9	21.4	…
Ottawa	46.7	17.0	12.7	17.0	…
sequoyah	213.6	47.5	89.0	77.1	…
All counties	**1,331.2**	495.6	468.4	367.3	…

Table *S.-Area of timberland by* county *and site class, northeast Oklahoma counties, 1993*

County	All classes	Site Class *(Cubic feet/acre/year)*				
		>165	120-165	85-120	SO-85	**<50**
	Thousand acres					
Adair	227.2	…	…	15.1	128.7	83.3
Cherokee	260.8	…	6.7	13.4	80.3	160.5
Delaware	214.2	…	6.7	6.7	100.4	100.4
McIntosh	136.4	…	…	6.5	45.5	84.5
Mayes	125.2	…	…	20.9	41.7	62.6
Muskogee	107.0	…	…	…	42.8	64.2
Ottawa	46.7	…	…	…	29.7	17.0
Sequoyah	213.6	5.9	…	17.8	100.8	89.0
All counties	**1,331.2**	5.9	13.4	80.4	570.0	661.5

Table *6.-Area of timberland by county and stocking class of growing-stock trees, northeasf Oklahoma counties, 1993*

Countv	All classes	Stocking class (Percent)				
		>130	100-130	60-100	**16.7–60**	**<16.7**
	Thousand acres					
Adair	227.2	…	…	68.2	151.5	7.6
Cherokee	260.8	…	6.7	93.6	160.5	…
Delaware	214.2	…	…	33.5	174.1	6.7
McIntosh	136.4	…	…	13.0	104.0	19.5
Mayes	125.2	…	…	27.8	83.5	13.9
Muskogee	107.0	…	…	53.5	48.2	5.4
Ottawa	46.7	…	…	8.5	38.2	…
sequoyah	213.6	…	…	47.5	136.4	29.7
All counties	**1,331.2**	…	6.7	345.6	**896.3**	82.7

Table 7.—*Area of timberland by forest type and ownership class, northeast Oklahoma counties, 1993*

Forest type	All ownerships	National forest	other public	Forest industry	Forest industry-leased	Other private
	Thousand acres					
Loblolly-shortleaf pine	21.2	…	7.0	…	…	14.3
softwood total	21.2	…	7.0	…	…	14.3
Oak-pine	25.2	…	…	…	…	25.2
Oak-hickory	1.163.8	…	99.4	…	…	1,064.4
Oak–gum–cypress	69.9	…	32.6	…	…	37.4
Elm-ash-cottonwood	51.0	…	5.9	…	…	45.1
Hardwood total	1,310.0	…	137.9	…	…	1,172.1
AU types	1.331.2	…	144.9	…	…	1,186.4

Table 8.—*Area of timberland by ownership and stocking class of growing-stock trees, northeast Oklahoma counties, 1993*

Ownership class	All classes	Stocking class (*Percent*)				
		>130	100–130	60–100	16.7–60	<16.7
	Thousand acres					
Other public	144.9	…	…	49.8	88.1	7.0
Other private	1,186.4	…	6.7	295.8	808.2	75.7
All ownerships	1,331.2	…	6.7	345.6	896.3	82.7

Table 9.-*Area of timberland by forest type and stand-size class, northeast Oklahoma counties, 1993*

Forest type	All classes	Stand-size class			Nonstocked areas
		Sawtimber	Poletimber	Sapling-seedling	
	Thousand acres				
Loblolly–shortleaf pine	21.2	13.6	7.6	…	…
Softwood total	21.2	13.6	7.6	…	…
Oak-pine	25.2	…	25.2	…	…
Oak-hickory	1,163.8	424.1	397.3	342.4	…
Oak-gum-cypress	69.9	38.1	25.9	5.9	…
Elm-ash-cottonwood	51.0	19.7	12.4	18.9	…
Hardwood total	1,310.0	481.9	466.8	367.3	…
All types	1,331.2	495.6	468.4	367.3	…

Table 10.—*Number live trees on* timberland *by &tailed species and diameter class, northeast Oklahoma counties, 1993*

Species	All classes	Diameter class (*Inches* at *breast* height) 1.0–2.9	3.0–4.9	5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–28.9	229.0
	Thousand trees												
Shortleaf-loblolly pines	14,332	3,068	5.081	2,484	1,352	1,120	611	352	190	73	...	...	...
Other softwoods	7,545	3,701	2,262	1,119	434	...	29	...	...	...	...	...	...
Total **softwoods**	21,876	6,769	7,344	3,603	1.786	1.120	640	352	190	73	...	...	...
Select white oaks	48,843	32.502	7,740	3,100	2,219	1,135	894	480	249	244	114	167	...
Select red oaks	22,266	14,824	390	1.505	1,401	1.406	986	762	286	322	134	181	69
Other white oaks	118,464	61,870	25,182	12,387	8,420	4,418	2,292	1,701	1,162	422	241	368	...
Other red oaks	100,813	57,841	12,222	9,435	6,167	5,129	3,578	2,545	1,848	**963**	520	512	52
Hickory	113,895	74,352	22,128	7,769	3,974	2,562	1,354	932	454	202	91	68	7
Hard maple	5,190	3,940	694	**100**	293	...	42	78	18	17	...	8	...
Soft maple	16,170	13,261	1,798	434	171	39	125	92	68	61	45	60	17
Tupelo–blackgum	10,951	8,146	1,841	265	183	145	108	145	54	18	38	8	...
Ash	10,637	5,993	613	1,193	1,339	682	334	199	92	122	22	42	4
Cottonwood-aspen	6,496	2,176	2.719	1,355	190	45	...	...	...	...	...	6	4
Black walnut	5,694	3,339	613	858	262	177	143	189	34	16	24	36	4
Other hardwoods	205,764	145,579	37,414	12,482	4,494	2,848	1,467	695	302	231	76	142	32
Total hardwoods	665,182	423,823	113,355	50,884	29,114	18,586	11,322	7,819	4,567	2,618	1.305	1,599	191
Noncommercial	93,979	56,140	20,858	6,837	4,145	3,208	1,413	641	447	152	91	46	...
All species	781,037	486,732	141,557	61,324	35,044	22,914	13,375	8,812	5,204	2,843	1,396	1.644	191

Table 11 .-*Number of growing-stock trees on timberland by species and diameter class, northeast Oklahoma counties. 1993*

Species	AU classes	Diameter class (*Inches at breast height*) 1.0–2.9	3.0–4.9	5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–28.9	229.0
	Thousand trees												
Shortleaf-loblolly pines	11,178	2,455	3,149	2,042	1,222	1,120	576	352	190	73	...	...	...
Other softwoods	7.458	3.701	2.262	1.119	347	...	29	...	...	...	...	...	...
Total softwoods	18,636	6,156	5,411	3,161	1,569	1,120	605	352	190	73	...	...	...
Select white oaks	20,678	11,648	4,016	1,957	1,782	482	442	144	68	69	33	37	...
Select red oaks	10,645	5,698	...	1,057	1,022	954	753	511	194	190	101	96	69
Other white oaks	57,939	22,646	13,207	8,961	7,416	3,037	1,279	723	423	154	44	48	...
Other red oaks	55,580	26,288	6,127	8,078	5,186	4,016	2,436	1,461	1,060	449	271	1%	12
Hickory	54,118	27,935	14,092	5,880	2,492	1,761	729	771	263	142	38	16	...
Hard maple	187	...	...	**100**	...	...	42	28	18	...	...	...	...
Soft maple	1,933	1,389	...	142	...	39	92	48	68	45	45	53	13
Tupelo-blackgum	4,913	2,472	1,841	123	86	91	68	120	54	18	38	...	...
Ash	4,088	981	613	604	942	451	184	128	80	73	22	10	...
Cottonwood-aspen	1,630	...	544	845	190	45	...	...	...	...	...	6	...
Black walnut	1,641	1,003	...	286	...	135	38	103	19	16	24	16	...
Other hardwoods	44,966	24,784	9,283	4,766	2,215	2,105	853	516	15.5	166	54	60	9
Total hardwoods	258,317	124.845	49,723	32,799	21,330	13,115	6,915	4,554	2,403	1,322	670	538	103
All species	276,953	131,001	55,135	35,959	22,899	14.234	7,520	4,906	2,593	1,395	670	538	103

Table 12.—*Volume of growing stock on timberland by* species *and diameter class, northeast Oklahoma counties, 1993*

Species	All classes	Diameter class (Inches at breast height) 5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–28.9	≥29.0
	Million cubic feet										
Shortleaf-loblolly pines	46.6	4.3	7.3	11.1	9.0	7.5	4.5	2.8	...	...	...
Other softwoods	3.2	1.6	1.3	...	0.3	...	...	...	...	...	...
Total softwoods	49.8	5.9	8.6	11.1	9.3	7.5	4.5	2.8	...	...	...
Select white oaks	37.2	4.7	10.2	4.6	7.1	3.1	1.3	2.2	1.7	2.2	...
Select red oaks	69.8	2.5	5.8	9.2	12.0	10.5	5.7	6.9	4.2	5.8	7.1
Other white oaks	118.7	18.9	32.7	23.2	15.3	11.9	9.3	3.8	1.3	2.3	...
Other red oaks	199.4	17.7	25.1	34.3	32.9	27.8	25.7	13.8	10.0	11.0	1.0
Hickory	75.8	11.7	10.4	15.5	9.9	14.0	6.5	4.5	1.9	1.4	...
Hard maple	1.7	0.3	...	...	0.5	0.4	0.5	...	...	...	...
Soft maple	15.5	0.3	...	0.7	1.5	1.2	1.9	1.9	2.5	3.9	1.6
Tupelo-blackgum	9.1	0.4	0.5	0.8	1.0	2.6	1.8	0.6	1.5	...	...
Ash	21.7	1.4	4.8	4.0	2.6	2.6	2.2	2.8	1.0	0.4	...
Cottonwood-aspen	2.8	1.2	1.0	0.3	...	...	...	...	...	0.3	...
Black walnut	7.3	0.6	...	1.1	0.3	2.4	0.6	0.7	0.5	1.0	...
Other hardwoods	79.3	9.7	10.4	18.3	12.5	10.8	4.4	5.6	2.5	4.3	0.9
Total hardwoods	638.3	69.5	100.8	112.1	95.5	87.3	60.0	42.8	27.1	32.7	10.5
All species	688.1	75.4	109.5	123.2	104.9	94.8	64.5	45.6	27.1	32.7	10.5

Table 13.—*Volume of growing stock in the sawlogportion of sawtimber trees on timberland by species and diameter class, northeast Oklahoma counties, 1993*

Species	All classes	Diameter class (Inches at breast height) 9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–28.9	≥29.0
	Million cubic feet								
Shortleaf-loblolly pines	29.7	9.1	7.6	6.3	4.0	2.7	...	...	...
Other softwoods	0.3	...	0.3	...	...	...	...	...	...
Total softwoods	30.1	9.1	7.9	6.3	4.0	2.7	...	...	...
Select white oaks	14.2	...	4.9	2.6	1.2	1.9	1.6	2.1	...
Select red oaks	42.7	...	8.9	8.1	4.4	6.3	3.6	5.1	6.4
Other white oaks	35.0	...	11.7	9.5	7.9	3.1	1.1	1.6	...
Other red oaks	99.7	...	25.4	22.7	21.3	11.2	8.4	9.8	1.0
Hickory	31.3	...	7.8	11.9	5.2	3.5	1.7	1.2	...
Hard maple	1.1	...	0.3	0.3	0.4	...	...	...	...
Soft maple	11.6	...	1.0	1.0	1.3	1.6	1.8	3.3	1.6
Tupelo-blackgum	6.7	...	0.9	2.3	1.6	0.6	1.4	...	...
Ash	9.2	...	1.8	2.1	1.8	2.2	0.9	0.4	...
Cottonwood-aspen	0.2	...	...	...	...		...	0.2	...
Black walnut	4.1	...	0.3	1.7	0.4	0.3	0.5	0.8	...
Other hardwoods	33.2	...	9.3	8.4	3.7	4.8	1.9	4.2	0.9
Total hardwoods	289.1	...	72.3	70.5	49.3	35.7	22.9	28.7	9.8
All species	319.2	9.1	80.2	76.8	53.3	38.4	22.9	28.7	9.8

Table 14.—*Volume of sawtimber on timberland by species and diameter class, northeast Oklahoma counties, 1993*

Species	All classes	Diameter class (inches at breast height) 9.0-10.9	11.&12.9	13.0-14.9	15.0-16.9	17.0–18.9	19.0–20.9	21.0–28.9	≥29.0
	Million board feet								
Shortleaf-loblolly pines	169.1	46.3	43.6	37.3	25.0	17.1	...	...	...
Other softwoods	1.5	...	1.5	...	...	...	...	...	...
Total softwoods	170.6	46.3	45.1	37.3	25.0	17.1	...	...	...
Select white oaks	84.7	...	27.6	14.1	7.1	12.3	10.6	13.1	...
Select red oaks	261.4	...	49.0	47.2	26.4	38.3	23.8	33.8	42.9
other white oaks	202.5	...	62.5	54.2	48.7	19.5	6.2	11.3	...
Other red oaks	582.1	...	134.8	129.5	126.7	67.8	52.5	65.8	5.0
Hickory	183.5	...	42.2	67.9	30.9	22.9	11.9	7.7	...
Hard maple	6.5	...	1.9	1.8	2.8	...	...	...	...
Soft maple	62.4	...	4.8	5.3	7.2	8.4	11.4	19.2	6.0
Tupelo–blackgum	38.1	...	4.8	13.0	9.0	3.4	7.9	...	...
Ash	50.0	...	9.6	11.1	9.2	12.4	5.3	2.4	...
Cottonwood-aspen	1.4	...	...		...	...	...	1.4	...
Black walnut	25.6	...	1.4	10.5	2.4	2.2	3.3	5.6	...
Other hardwoods	194.3	...	51.4	49.6	22.7	28.7	11.5	25.4	5.0
Total hardwoods	1.692.4	...	390.0	404.1	293.2	216.0	144.4	185.8	58.9
All species	1,863.1	46.3	435.1	441.3	318.2	233.1	144.4	185.8	58.9

Table 15.—*Volume of growing stock and sawtimber on timberland by county and species group, northeast Oklahoma counties, 1993*

County	Crowing stock: All species	softwood: Pine: Planted	softwood: Pine: Natural	softwood: Pine: Other	Hardwood: Soft*	Hardwood: Hard+	Sawtimber: All species	Softwood: Pine: Planted	Softwood: Pine: Natural	Softwood: Pine: Other	Hardwood: Soft*	Hardwood: Hard+
	Million cubic feet						Million board feet					
Adair	141.3	...	10.5	...	9.1	121.7	419.6	...	38.8	...	38.4	342.4
Cherokee	170.9	...	17.0	...	31.1	122.8	516.7	...	62.8	...	99.1	354.7
Delaware	82.5	...	4.7	0.5	5.5	71.8	225.2	...	15.3	...	15.5	194.4
McIntosh	45.1	...	1.4		12.2	31.5	117.1	...		...	25.1	92.1
Mayes	78.6	...	8.0	...	14.1	56.5	236.9	...	26.5	...	50.2	160.1
Muskogee	72.1	...	0.4	...	18.1	53.6	134.0	...	2.1	...	40.3	91.6
Ottawa	20.7	...		...	0.5	20.2	66.7	...		...	0.7	66.0
Sequoyah	76.7	...	6.1	1.2	10.4	59.0	146.9	...	23.7	1.5	17.4	104.3
All counties	688.1	...	46.6	3.2	101.1	537.2	1,863.1	...	169.1	1.5	286.9	1,405.6

*Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.
†Hardwood species with an average specific gravity greater than 0.50 such as oaks, hard maple, hickories, and green and white ash.

Table 16.—*Volume* *group, northeast Oklahoma counties,* 1993

class of timber	All species	Softwood			Hardwood	
		Pine				
		Planted	Natural	Other	Soft*	Hard†
	Million cubic feet					
Sawtimber trees						
Sawlog portion	319.2	…	29.7	0.3	50.1	239.0
Upper-stem portion	71.9	…	5.2	…	10.6	56.1
Total	391.1	…	34.9	0.3	60.7	295.1
Poletimber trees	297.0	…	11.7	2.8	40.4	242.1
All growing-stock trees	688.1	…	46.6	3.2	101.1	537.2
Rough trees						
Sawtimber size	158.0	…	…	…	11.9	146.1
Poletimber size	121.8	…	0.9	0.2	18.8	101.9
Total	279.8	…	0.9	0.2	30.8	248.0
Rotten trees						
Sawtimber size	56.8	…	0.1	…	4.1	52.6
Poletimber size	7.1	…	0.1	…	0.3	6.6
Total	63.9	…	0.2	…	4.5	59.2
Salvable dead trees						
Sawtimber size	4.3	…	0.4	…	0.8	3.1
Poletimber size	1.8	…	0.4	…	…	1.4
Total	6.1	…	0.8	…	0.8	4.5
All classes	1.037.9	…	48.6	3.4	137.1	848.9

*Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.
†Hardwood species with an average specific gravity greater than 0.50 such as oaks, hard maple, hickories, and green and white ash.

Table 17.—*Volume of live trees and growing stock on timberland by ownership class and species group, northeast Oklahoma counties, 1593*

ownership class	Live trees						Growing stock					
	All species	Softwood			Hardwood		All species	Softwood			Hardwood	
		Pine						Pine				
		Planted	Natural	Other	Soft*	Hard+		Planted	Natural	Other	Soft*	Hard†
	Million cubic feet											
Other public	119.9	…	9.4	0.3	18.0	92.2	86.2	…	8.9	0.3	13.1	63.9
Other private	911.9	…	38.3	3.1	118.3	752.2	601.9	…	37.7	2.9	88.0	473.3
A U ownerships	1,031.8	…	47.7	3.4	136.3	844.4	688.1	…	46.6	3.2	101.1	537.2

*Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.
†Hardwood species with an average specific gravity greater than 0.50 such as oaks, hard maple, hickories, and green and white ash.

Table 18.-Average *net annual growth growing stockandsawtimber on timberland by county andspecies group, northeast Oklahoma counties, 19864993*

County	Crowing stock						Sawtimber					
		Softwood			Hardwood			**Softwood**			Hardwood	
		Pine						Pine				
	All species	Planted	Natural	Other	soft*	Hard+	All species	Planted	Natural	Other	Soft'	Hard+
	Million cubic feet						*Million board feet*					
Adair	0.3	…	0.8	…	-0.1	-0.4	7.8	…	3.7	…	0.6	3.5
Cherokee	5.8	…	0.8	…	0.7	4.3	18.3	…	2.9	…	2.5	12.9
Delaware	4.8	…	0.4	…	0.5	3.8	14.0	…	0.7	…	1.4	11.8
McIntosh	1.4	…	…	0.2	-0.3	1.5	6.8	…	…	…	-1.4	8.2
Mayes	6.0	…	0.4	…	0.7	4.9	16.3	…	1.7	…	1.2	13.4
Muskogee	4.9	…	…	…	1.4	3.6	11.5	…	0.2	…	3.8	7.5
Ottawa	1.3	…	…	…	…	1.3	5.2	…	…	…	0.1	5.1
Sequoyah	3.4	…	0.1	0.1	0.6	2.6	5.0	…	0.7	0.2	…	4.0
All counties	27.9	…	2.5	0.3	3.4	21.6	84.9	…	10.0	0.2	8.2	66.4

*Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, ted maple, basswood, aspen, and willow.
†**Hardwood** species with an average specific gravity greater than 0.50 such as oaks, hard maple, hickories, and green and white ash.

Table 19.—*Average* annual *removals of growing stock andsawtimber on timberland by county and species group, northeast Oklahoma counties, 1986–1993*

County	Crowing stock						Sawtimber					
		Softwood			Hardwood			Softwood			Hardwood	
		Pine						Pine				
	All species	Planted	Natural	Other	Soft*	Hard+	All species	Planted	Natural	Other	Soft*	Hard+
	Million cubic feet						*Million board feet*					
Adair	4.7	…	1.9	…	0.2	2.7	16.2	…	8.8	…	0.6	6.8
Cherokee	4.3	.	0.1	…	0.1	4.2	10.8	…	0.3	…	0.2	10.3
Delaware	0.4	…	0.1	..	. . .	0.3	1.7	…	0.6	…	…	1.1
McIntosh	0.1	…	…	…	…	0.1	…	…	…	…	…	…
Mayes	0.1	…	…	…	…	0.1	0.2	…	…	…	…	0.2
Muskogee	1.0	…	…	…	0.2	0.9	2.6	…	…	…	0.8	1.8
Ottawa	0.6	…	…	…	…	0.6	3.4	…	…	…	…	3.4
Sequoyah	0.3	…	…	…	…	0.3	0.5	…	…	…	…	0.5
All counties	11.6	…	2.1	…	0.4	9.1	35.4	…	9.7	…	1.6	24.2

*Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.
†**Hardwood** species with an average specific gravity greater than 0.50 such as oaks, hard maple, hickories, and green and white ash.

Table 20.—*Average net annual growth and average annual removals of growing stock on timberland by species, northeast Oklahoma counties, 1986–1993*

Species	Growth	Removals
	– – – – Million cubic feet – – – –	
Yellow pines	2.5	2.1
other softwoods	0.3	…
Total softwoods	2.9	2.1
Select white-red oaks	1.4	1.9
Other white-red oaks	14.7	5.9
Hickory	3.4	1.0
Hard maple	0.1	0.1
Ash-walnut-black cherry	1.7	0.2
Other hardwoods	3.8	0.5
Total hardwoods	25.0	9.5
All species	27.9	11.6

Table 21 .-*Average net annual growth and average annual removals of sawtimber on timberland by species, northeast Oklahoma counties, 19861993*

Species	Growth	Removals
	– – – – Million board feet – – – –	
Yellow pines	10.0	9.7
Other softwoods	0.2	…
Total softwoods	10.2	9.7
Select white-red oaks	11.0	6.5
Other white-red oaks	41.5	15.3
Hickory	9.5	1.2
Hard maple	…	0.3
Ash-walnut-black cherry	4.0	0.9
Other hardwoods	8.7	1.6
Total hardwoods	74.7	25.7
All species	84.9	35.4

Table *22.-Average annual mortality of growing stock and sawtimber on timberland by species, northeast Oklahoma counties,* 19861993

Species	Growing stuck	Sawtimber
	Million cubic feet	*Million board feet*
Yellow pines	0.2	0.4
Total softwoods	0.2	0.4
Select white-red oaks	0.2	0.4
Other white-red oaks	2.1	5.7
Hickory	0.3	0.7
Ash-walnut-black cherry	0.3	1.3
Other hardwoods	0.9	2.5
Total hardwoods	3.7	10.6
All species	3.9	11.0

Table 23.—*Average net annual growth and average annual removals of growing stock on timberland by ownership class and species group, northeast Oklahoma counties, 1986-1993*

Ownership class	Growth						Removals					
		softwood			Hardwood			Softwood			Hardwood	
		Pine						Pine				
	All species	Planted	Natural	Other	Soft†	Hard+	All species	Planted	Natural	Other	soft†	Hard+
	Million cubic feet											
Other public	4.4	…	0.4	…	1.1	2.9	1.2	…	…	…	0.1	1.1
Other private	23.5	…	2.1	0.4	2.4	18.7	10.4	…	2.1	…	0.3	8.0
All ownerships	27.9	…	2.5	0.3	3.4	21.6	11.6	…	2.1	…	0.4	9.1

*Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.
†Hardwood species with an average specific gravity greater than 0.50 such as oaks, hard maple, hickories, and green and white ash.

Table 24.—*Average net annual growth and average annual removals of sawtimber on timberland by ownership class and species group, northeast Oklahoma counties, 1986-1993*

Ownership class	Growth						Removals					
		Softwood			Hardwood			softwood			Hardwood	
		Pine						Pine				
	All species	Planted	Natural	Other	Soft†	Hard+	All species	Planted	Natural	Other	Soft*	Hard+
	Million cubic feet											
Other public	10.3	…	2.0	…	1.4	6.9	1.5	…	…	…	0.2	1.3
Other private	74.6	…	8.0	0.2	6.8	59.5	33.9	…	9.7	…	1.4	22.9
All ownerships	84.9	…	10.0	0.2	8.2	66.4	35.4	…	9.7	…	1.6	24.2

*Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.
†Hardwood species with an average specific gravity greater than 0.50 such as oaks, hard maple, hickories, and green and white ash.

Table 25.—*Volume of sawtimber on timberland by species and tree grade, northeast Oklahoma counties, 1993*

Species	All grades	Grade 1	Grade2	Grade3	Grade4	Grade5
	Million board feet					
Yellow pines	169.1	22.4	40.0	101.5	…	5.3
Redcedar	1.5	1.5	…	…	…	…
Total softwoods	170.6	23.9	40.0	101.5	…	5.3
Select white-red oaks	346.1	75.0	57.2	124.7	68.2	21.1
Other white-red oaks	784.6	29.4	82.9	365.7	273.2	33.3
Hickory	183.5	9.1	30.7	49.0	73.5	21.2
Hard maple	6.5	…	…	1.8	4.7	…
Tupelo and blackgum	38.1	…	22.0	10.5	5.7	…
Ash-walnut-black cherry	78.5	19.7	26.6	18.3	…	13.9
Other hardwoods	255.2	59.6	67.5	84.9	18.5	24.6
Total hardwoods	1.692.4	192.9	286.9	654.9	443.8	114.0
All species	1,863.1	216.8	326.8	756.4	443.8	119.3

Table 26.—*Area of timberland by stand age, forest type group, and stand origin, northeast Oklahoma counties, 1993*

Stand age class	Pine		Oak-pine		Other hardwood types	
	Planted	Natural	Planted	Natural	Planted	Natural
Years	*Thousand acres*					
1-10	...	...	...	...	...	18.9
11-20	...	...	...	...	...	...
21-30	...	...	...	...	...	...
31–40	...	...	...	...	...	...
41-50	...	...	...	...	...	...
>50	...	...	...	...	...	...
Mixed	...	21.2	...	25.2	...	1,265.8
Total	...	21.2	...	25.2	...	1.284.8

Table 27.—*Volume of softwood growing stock on timberland by county and forest type group, northeast Oklahoma counties, 1993*

County	Total	Forest type group				
		Loblolly-shortleaf pine		Oak–pine	Oak–hickory	Elm–ash–cottonwood
		Planted	Natural			
	Million cubic feet					
Adair	10.5	...	4.9	..	5.6	..
Cherokee	17.0	..	10.1	3.6	3.3	..
Delaware	5.2	..	..	1.6	3.6	..
McIntosh	1.4	..	..	..	1.0	0.4
Mayes	8.0	..	8.0	..	..	..
Muskogee	0.4	..	..	...	0.4	..
Ottawa	..	..	..	..	..	..
Sequoyah				6.1		
All counties	49.8	...	23.0	11.4	15.0	0.4

Table 28.-*Volume of hardwood growing stock on timberland by county and forest type group, northeast* Oklahoma *counties,* 1993

County	Total	Forest type group					
		Loblolly-shortleaf pine		Oak–pine	Oak–hickory	Oak-gum-cypress	Elm–ash–cottonwood
		Planted	Natural				
	Million cubic feet						
Adair	130.9	...	0.5	...	130.4	...	...
Cherokee	153.9	...	...	2.2	109.3	28.1	14.3
Delaware	77.3	...	...	...	77.3	...	...
McIntosh	43.7	...	...	...	25.8	7.1	10.8
Mayes	70.6	...	0.8	...	54.8	15.0	...
Muskogee	71.8	...	...	...	66.0	5.8	...
Ottawa	20.7	...	...	...	20.7	...	...
Sequoyah	69.4	...	...	3.2	55.3	8.2	2.8
All counties	638.3	...	1.3	5.4	539.5	64.2	27.9

Table 29.—*Volume of softwood growing stock in the sawlogportion of sawtimber trees on timberland by forest type group, northeast Oklahoma counties, 1993*

County	Total	Forest type group: Loblolly–shortleaf pine, Planted	Loblolly–shortleaf pine, Natural	Oak–pine	Oak–hickory
	Million cubic feet				
Adair	7.0	...	3.3	...	3.7
Cherokee	10.6	...	7.1	1.1	2.4
Delaware	2.5	...	...	...	2.5
McIntosh	...	...	...	...	...
Mayes	5.0	...	5.0	...	...
Muskogee	0.3	...	...	...	0.3
Ottawa	...	...	...	...	...
Sequoyah	4.6	...	...	4.3	0.3
All counties	30.1	...	15.4	5.4	9.2

Table 30.—*Volume of hardwood growing stock in the sawlog portion of sawtimber trees on timberland by forest type group. northeast Oklahoma counties,* 1993

County	Total	Forest type group: Loblolly-shortleaf pine, Planted	Loblolly-shortleaf pine, Natural	Oak–pine	Oak–hickory	Oak–gum–cypress	Elm-ash cottonwood
	Million cubic feet						
Adair	67.0	...	...	...	67.0	...	...
Cherokee	75.7	...	...	1.0	44.7	20.8	9.2
Delaware	35.4	...	...	...	35.4	...	...
McIntosh	20.0	...	...	...	11.6	2.8	5.6
Mayes	36.1	...	0.3	...	26.3	9.6	...
Muskogee	22.3	...	...	...	19.3	3.0	...
Ottawa	11.2	...	...	...	11.2	...	...
Sequoyah	21.3	...	...	0.5	15.7	4.8	0.2
All counties	289.1	..	0.3	1.6	231.3	41.0	15.0

Table 31.—*Volume of timber on timberland by county, class of timber, and species group, northeast Oklahoma counties, 1993*

County	All classes	Growing stock: Softwood	Growing stock: Hardwood	Rough: Softwood	Rough: Hardwood	Rotten: Softwood	Rotten: Hardwood
	Million cubic feet						
Adair	221.7	10.5	130.9	..	73.8	...	6.5
Cherokee	228.7	17.0	153.9	0.3	52.4	0.1	5.0
Delaware	137.1	5.2	77.3	0.3	33.5	...	20.7
McIntosh	75.5	1.4	43.7	...	26.5	...	3.9
Mayes	124.0	8.0	70.6	0.5	27.6	...	17.3
Muskogee	97.1	0.4	71.8	...	23.7	...	1.3
Ottawa	32.1	...	20.7	...	7.7	...	3.7
sequoyah	115.6	7.3	69.4	...	33.5	0.1	5.3
All counties	**1,031.8**	49.8	638.3	1.1	278.7	0.2	63.7

Table 32.-Number *of live frees* on timberland by derailed species and *diameter class, northeast Oklahoma counties, 1993*

Species	All classes	Diameter class (*Inches at breast* height) 1.0–2.9	3.0–4.9	5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0-14.9	15.0-16.9	17.0–18.9	19.0–20.9	21.0–28.9	≥29.0
	Thousand trees												
Shortleaf pine	14,316	3,068	5.081	2,484	1,352	1.120	611	352	174	73	...	...	...
Loblolly pine	16	...	...	...	...	...	...	...	16	...	...	...	...
Redcedar	7,545	3,701	2,262	1,119	434	...	29	...	...	...	...	...	...
Total softwoods	21,876	6,769	7,344	3,603	1,786	1,120	640	352	190	73	...	...	...
Select white oaks	48,843	32.502	7,740	3,100	2,219	1,135	894	480	*249*	*244*	114	167	...
Select red oaks	22,266	14,824	390	1,505	1,401	1,406	986	762	286	322	134	181	69
Other white oaks	118,464	61,870	25,182	12,387	8,420	4,418	2,292	1,701	1,162	422	241	368	...
Other red oaks	100,813	57,841	12,222	9,435	6,167	5,129	3,578	2,545	1,848	963	520	512	52
Sweet pecan	2,527	5 %	613	770	217	94	110	51	...	15	27	26	7
Water hickory	102	...	...	102	...	...	...	...	...	...	...	...	...
Other hickories	111,266	73,756	21,515	6,897	3,758	2,468	1,244	881	454	187	64	42	...
Persimmon	10,782	7,749	2,789	231	...	...	...	...	...	...	12	...	...
Hard maple	5,190	3,940	694	100	293	...	42	78	18	17	...	8	...
Soft maple	14.296	12,770	694	294	171	...	125	48	36	45	35	60	17
Boxelder	1,874	491	1,104	140	...	39	...	44	32	16	9	...	...
Blackgum	10,951	8,146	1,841	265	183	145	108	145	54	18	38	8	...
White ash	3,364	1,035	613	535	678	247	94	40	31	56	11	25	...
Other ashes	7,273	4,959	...	658	661	436	240	159	62	66	12	17	4
Sycamore	1,206	...	...	382	208	234	95	118	36	42	21	40	30
Cottonwood	6,496	2,176	2,719	1,355	190	45	...	...	...	...	...	6	4
willow	1,532	...	...	389	464	494	90	25	...	40	12	17	...
Black walnut	5,694	3,339	613	858	262	177	143	189	34	16	24	36	4
Black cherry	3,719	2,002	1,227	411	...	...	66	...	...	12	...	...	...
American elm	9,955	5,528	3,247	568	334	80	87	59	43	...	...	10	...
Other elms	84,529	60,430	14.763	6,039	1,530	827	560	249	76	15	22	18	...
River birch	61	...	...	...	...	...	...	...	17	27	...	17	...
Hackberry	18,867	10,930	4,546	1,173	788	660	368	163	131	73	10	24	3
Black locust	5,281	3,699	1,027	340	214	...	...	...	...	...	...	...	...
Other locusts	3,847	2,823	...	325	194	242	180	57	...	10	...	17	...
Sassafras	30,496	28,392	1,227	546	232	79	20	...	...	...	...	...	...
Dogwood	31,027	22,255	7,974	627	170	...	..	...	...	...	...	...	...
Other commercial	4,464	1,772	614	1,452	361	231	...	24	...	10	...	...	...
Total hardwoods	665,182	423,823	113,355	50,884	29,114	18,586	11,322	7,819	4,567	2,618	1,305	1,599	191
Noncommercial	93,979	56,140	20,858	6,837	4,145	3,208	1,413	641	447	152	91	46	...
All species	781,037	486,732	141,557	61.324	35,044	22,914	13,375	8,812	5,204	2,843	1,396	1,644	191

Table 33.-Number of growing-stock trees on timberland by &tailed species and diameter class, northeast Oklahoma counties, 1993

Species	All classes	Diameter class (Inches at breast height) 5.0–6.9	7.0-8.9	9.0-10.9	11.0–12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.&20.9	21.0–28.9	≥29.0
	Thousand trees										
Shortleaf pine	5,558	2,042	1,222	1,120	576	352	174	73	...	...	...
Loblolly pine	16	...	...	...	...	...	16	...	...	...	...
Redcedar	1,495	1,119	347	...	29	...	...	...	...	...	...
Total softwoods	7,070	3.161	1,569	1.120	605	352	190	73	...	...	...
Select white oaks	5,014	1.957	1.782	482	442	144	68	69	33	37	...
Select red oaks	4,947	1,057	1,022	954	753	511	194	190	101	%	69
Other white oaks	22,085	8,961	7,416	3,037	1,279	723	423	154	44	48	...
Other red oaks	23,165	8.078	5,186	4,016	2,436	1,461	1,060	449	271	1%	12
Sweet pecan	783	478	61	94	92	51	...	...	...	6	...
Water hickory	102	102	...	...	...	...	...	...	...	...	...
Other hickories	11,206	5,299	2,431	1,667	637	720	263	142	38	10	...
Persimmon	109	97	...	...	...	...	...	...	12	...	...
Hard maple	187	100	...	...	42	28	18	...	...	...	...
Soft maple	464	142	...	...	92	48	36	45	35	53	13
Boxelder	80	...	...	39	...	...	32	...	9	...	...
Blackgum	599	123	86	91	68	120	54	18	38	...	...
White ash	1,226	398	510	204	34	21	31	17	11	...	...
Other ashes	1,268	206	431	247	150	107	49	56	12	10	...
sycamore	1,140	382	208	1%	95	118	36	42	21	33	9
Cottonwood	1,087	845	190	45	...	...	...	...	...	6	...
Willow	1,171	235	307	451	90	25	...	40	12	10	...
Black walnut	637	286	...	135	38	103	19	16	24	16	...
Black cherry	34	...	...	...	34	...	...	...	...	...	...
American elm	563	269	58	80	87	59	...	...	...	10	...
Other elms	4,493	2,443	889	693	251	173	19	15	9	...	...
River biih	8	...	...	...	...	...	...	...	...	8	...
Hackberry	1.959	495	415	561	233	97	99	59	...	...	...
Black locust	423	340	83	...	...	...	...	...	...	...	...
Other locusts	414	208	114	...	62	20	...	10	...	...	...
Sassafras	234	112	81	41	...	...	...	...	...	...	...
Dogwood	185	185	...	...	...	...	...	...	...	...	...
Other commercial	167	...	60	83	...	24	...	...	...	...	...
Total hardwoods	83.748	32,799	21.330	13.115	6.915	4,554	2.403	1.322	670	538	103
All species	90,818	35,959	22,899	14.234	7,520	4,906	2,593	1,395	670	538	103

Table 34.—*Volume of growing stock on timberland by detailed species and diameter class, northeast Oklahoma counties, 1993*

Species	All classes	Diameter class (Inches at breast height) 5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–28.9	≥29.0
	Million cubic feet										
Shortleaf pine	46.2	4.3	7.3	11.1	9.0	7.5	4.1	2.8	…	…	…
Loblolly pine	0.4	…	…	…	…	…	0.4	…	…	…	…
Redcedar	3.2	1.6	1.3	…	0.3	…	…	…	…	…	…
Total softwoods	49.8	5.9	8.6	11.1	9.3	7.5	4.5	2.8	…	…	…
Select white oaks	37.2	4.7	10.2	4.6	7.1	3.1	1.3	2.2	1.7	2.2	…
Select red oaks	69.8	2.5	5.8	9.2	12.0	10.5	5.7	6.9	4.2	5.8	7.1
Other white oaks	118.7	18.9	32.7	23.2	15.3	11.9	9.3	3.8	1.3	2.3	…
Other red oaks	199.4	17.7	25.1	34.3	32.9	27.8	25.7	13.8	10.0	11.0	1.0
sweet pecan	5.0	1.1	0.6	1.0	0.9	0.8	…	…	…	0.7	…
water hickory	0.3	0.3	…	…	…	…	…	…	…	…	…
Other hickories	70.6	10.4	9.8	14.5	8.9	13.2	6.5	4.5	1.9	0.7	…
Persimmon	0.9	0.3	…	…	…	…	…	…	0.6	…	…
Hard maple	1.7	0.3	…	…	0.5	0.4	0.5	…	…	…	…
Soft maple	13.2	0.3	…	…	1.5	1.2	0.9	1.9	2.1	3.9	1.6
Boxelder	2.3		…	0.7	…	…	1.0	…	0.5	…	…
Blackgum	9.1	0.4	0.5	0.8	1.0	2.6	1.8	0.6	1.5	…	…
White ash	8.1	0.9	3.1	1.7	0.4	0.3	0.9	0.4	0.4	…	…
Other ashes	13.6	0.5	1.8	2.3	2.2	2.2	1.4	2.4	0.5	0.4	…
sycamore	18.5	1.3	1.9	1.7	1.5	3.7	1.3	1.9	1.3	3.0	0.9
Cottonwood	2.8	1.2	1.0	0.3	…	…	…	…	…	0.3	…
willow	7.4	0.4	0.8	3.1	1.0	0.3	…	1.1	0.3	0.3	…
Black walnut	7.3	0.6	…	1.1	0.3	2.4	0.6	0.7	0.5	1.0	…
Black cherry	0.6	…	…	…	0.6	…	…	…	…	…	…
American ehn	4.1	0.7	0.2	0.8	1.3	0.8	…	…	…	0.4	…
Other elms	22.2	4.2	4.0	6.4	3.8	2.8	0.3	0.4	0.3	…	…
River birch	0.6	…	…	…	…	…	…	…	…	0.6	…
Hackberry	18.4	1.0	1.6	5.1	3.6	2.4	2.8	1.9	…	…	…
Black locust	0.9	0.6	0.3	…	…	…	…	…	…	…	…
Other locusts	2.5	0.5	0.7	…	0.8	0.3	…	0.3	…	…	…
Sassafras	1.0	0.3	0.3	0.4	…	…	…	…	…	…	…
Dogwood	0.4	0.4	…	…	…	…	…	…	…	…	…
Other commercial	1.7	…	0.4	0.8	…	0.4	…	…	…	…	…
Total hardwoods	638.3	69.5	100.8	112.1	95.5	87.3	60.0	42.8	27.1	32.7	10.5
All species	688.1	75.4	109.5	123.2	104.9	94.8	64.5	45.6	27.1	32.7	10.5

Table 35.—*Volume of growing stock in the sawlogportion of sawtimber trees on timberland by detailed species anddiameterclass,* northeast *Oklahoma counties, 1993*

Species	All classes	Diameter class (Inches at breast height) 9.0–10.9	11.0–12.9	13.0-14.9	15.&16.9	17.0-18.9	19.0-20.9	21.0–28.9	≥29.0
		Million cubic feet							
Shortleaf pine	29.4	9.1	7.6	6.3	3.7	2.7	. . . . .		
Loblolly pine	0.3	. . . . .			0.3	. . . . .			
Redcedar	0.3	...	0.3	. . . . .					
Total softwoods	30.1	9.1	7.9	6.3	4.0	2.7			
Select white oaks	14.2		4.9	2.6	1.2	1.9	1.6	2.1	
Select fed oaks	42.7		8.9	8.1	4.4	6.3	3.6	5.1	6.4
Other white oaks	35.0		11.7	9.5	7.9	3.1	1.1	1.6	
Other red oaks	99.7		25.4	22.7	21.3	11.2	8.4	9.8	1.0
sweet pecan	2.0		0.7	0.7				0.6	
Other hickories	29.3		7.1	11.1	5.2	3.5	1.7	0.6	
Persimmon	0.4						0.4		
Hard maple	1.1		0.3	0.3	0.4				
Soft maple	10.6		1.0	1.0	0.7	1.6	1.5	3.3	1.6
Boxelder	1.0				0.7		0.3		
Blackgum	6.7		0.9	2.3	1.6	0.6	1.4		
White ash	1.8		0.3	0.2	0.5	0.4	0.4		
Other ashes	7.4		1.5	1.9	1.3	1.8	0.5	0.4	
Sycamore	12.4		1.4	3.2	1.3	1.7	1.0	2.9	0.9
Cottonwood	0.2							0.2	
willow	2.6		0.7	0.3		1.1	0.3	0.3	
Black walnut	4.1		0.3	1.7	0.4	0.3	0.5	0.8	
Black cherry	0.6		0.6						
American elm	1.9		0.9	0.7				0.4	
Other elms	6.0		2.9	2.2	0.3	0.4	0.2		
River birch	0.6							0.6	
Hackberry	7.5		2.4	1.5	2.2	1.5			
Other locusts	1.0		0.5	0.2		0.2			
Other commercial	0.3			0.3					
Total hardwoods	289.1		72.3	70.5	49.3	35.7	22.9	28.7	9.8
All species	319.2	9.1	80.2	76.8	53.3	38.4	22.9	28.7	9.8

Table 36.—*Volume of live trees on timberland by detailed species and class of timber; northeast Oklahoma counties, 1993*

Species	All live	Crowing stock	Rough	Rotten
		Million cubic feet		
Shortleaf pine	47.4	46.2	0.9	0.2
Loblolly pine	0.4	0.4	…	…
Redcedar	3.4	3.2	0.2	…
Total softwoods	51.1	49.8	1.1	0.2
Select white oaks	66.9	37.2	26.4	3.3
Select red oaks	88.2	69.8	12.0	6.4
Other white oaks	177.7	118.7	46.5	12.5
Other red oaks	276.5	199.4	48.5	28.6
sweet pecan	8.4	5.0	3.3	0.1
Water hickory	0.3	0.3	…	…
Other hickories	93.0	70.6	16.8	5.6
Persimmon	1.0	0.9	…	0.1
Hard maple	4.2	1.7	2.3	0.2
Soft maple	15.1	13.2	1.3	0.5
Boxelder	3.1	2.3	0.5	0.3
Blackgum	10.6	9.1	0.8	0.6
White ash	10.8	8.1	2.4	0.4
Other ashes	18.3	13.6	4.0	0.6
Sycamore	21.1	18.5	1.4	1.1
Cottonwood	3.4	2.8	0.5	0.2
willow	8.5	7.4	0.9	0.2
Black walnut	12.0	7.3	4.0	0.7
Black cherry	1.5	0.6	0.7	0.1
American elm	5.9	4.1	1.7	0.1
Other elms	35.0	22.2	12.4	0.3
River birch	1.3	0.6	0.2	0.5
Hackberry	26.0	18.4	7.2	0.4
Black locust	1.1	0.9	…	0.2
Other locusts	6.1	2.5	3.2	0.3
Sassafras	3.1	1.0	2.1	0.1
Dogwood	1.2	0.4	0.8	…
Other commercial	6.7	1.7	4.9	0.1
Total hardwoods	907.0	638.3	205.1	63.7
Noncommercial	73.7	…	73.7	…
All species	1,031.8	688.1	279.8	63.9

Table 37.—*Volume of sawtimberfor tree grade I on timberland by &tailed species and diameter class, northeast Oklahoma counties, 1993*

Species	All classes	Diameter class (Inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	≥29.0
	Million board feet								
Shortleaf pine	22.4	2.2	3.0	13.8	3.4	.	.	.	.
Redcedar	1.5	…	1.5	…	…	…	…	…	…
Total softwoods	23.9	2.2	4.5	13.8	3.4	…	…	…	…
Select white oaks	8.7	…	…	…	…	…	…	8.7	…
Select red oaks	66.3	…	…	…	8.3	11.0	5.8	14.3	26.9
Other white oaks	10.3	…	…	…	2.8	3.6	…	3.9	…
Other red oaks	19.1	…	…	…	…	3.7	5.6	9.9	…
sweet pecan	4.2	…	…	…	…	…	…	4.2	…
Other hickories	4.9	…	…	…	1.6	…	3.2	…	…
Persimmon	1.7	…	…	…	…	…	1.7	…	…
Soft maple	17.4	…	…	…	…	2.8	3.6	11.0	…
White ash	2.2	…	…	…	…	…	2.2	…	…
Other ashes	9.7	…	…	…	…	7.2	…	2.4	…
Sycamore	34.5	…	…	…	…	10.6	6.4	13.4	4.2
willow	4.0	…	…	…	…	2.1	1.9	…	…
Black walnut	7.8	…	…	…	…	2.2	…	5.6	…
American elm	2.0	…	…	…	…	…	…	2.0	…
Total hardwoods	192.9	…	…	…	12.8	43.2	30.4	75.4	31.1
All species	216.8	2.2	4.5	13.8	16.2	43.2	30.4	75.4	31.1

Table 38.—*Volume of sawtimberfor tree grade 2 on timberland by detailed species and diameter class, northeast Oklahoma counties, 1993*

Species	All classes	Diameter class (Inches at breast height) 9.0-10.9	11.&12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	≥29.0
	Million board feet								
Shortleaf pine	37.9	12.4	8.2	5.7	4.5	7.1	.	.	.
Loblolly pine	2.1	.	.	.	2.1	.	.	.	.
Total softwoods	40.0	12.4	8.2	5.7	6.6	7.1	.	.	.
Select white oaks	12.7	.	.	3.7	3.4	3.2	.	2.4	.
Select red oaks	44.5	.	.	7.9	8.6	6.4	9.1	4.2	8.3
Other white oaks	20.9	.	.	7.5	4.9	1.4	3.1	3.9	.
Other red oaks	62.0	.	.	7.6	22.0	7.9	8.9	15.6	…
sweet pecan	1.8	…	…	1.8	…	…	…	…	…
Other hickories	28.8	.	.	8.0	9.8	2.4	8.6		
Soft maple	13.0	.	.	5.3	…	3.4	4.3	…	…
Blackgum	22.0	.	.	2.5	9.0	3.4	7.1	…	…
White ash	4.7	.	.	1.2	3.5	…	…	…	…
Other ashes	14.8	.	.	4.1	4.2	3.4	3.2	…	…
Sycamore	27.3	.	.	19.5	7.8	…	…		
willow	2.6	.	.	.	…	2.6	…	…	…
Black walnut	7.1	.	.	4.7	2.4	…	…		
Other elms	4.4	.	.	4.4	…	…	…	…	…
River birch	3.3	.	.	…	…	…	…	3.3	…
Hackberry	15.1	.	.	1.1	9.5	4.5	…		
Other commercial	1.8	…	…	1.8	…	…	…	…	…
Total hardwoods	286.9	…	…	81.1	85.3	38.5	44.3	29.5	8.3
All species	326.8	12.4	8.2	86.8	91.9	45.5	44.3	29.5	8.3

Table 39.—*Volume of sawtimber for tree grade 3 on timberland by &tailed* species *and diameter class, northeast Oklahoma counties, 1993*

Species	All classes	Diameter class (Inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.&16.9	17.0-18.9	19.0-20.9	21.0-28.9	≥29.0
	Million board feet								
Shortleaf pine	101.5	27.8	32.4	16.4	15.0	10.0	...	...	...
Total softwoods	101.5	27.8	32.4	16.4	15.0	10.0	...	...	...
Select white oaks	32.4	...	12.7	...	...	9.2	10.6	...	...
Select red oaks	92.3	...	30.4	18.6	7.6	14.1	4.0	11.0	6.5
Other white oaks	97.3	...	31.5	33.0	20.8	7.8	0.7	3.5	...
Other red oaks	268.4	...	68.5	67.0	54.1	33.1	16.6	26.4	2.8
sweet pecan	1.3	...	1.3	...	...	...	...	...	...
Other hickories	47.8	...	18.1	19.8	...	6.3	...	3.5	...
Hard maple	1.8	...	...	1.8	...	...	...	...	...
Soft maple	8.6	...	4.8	...	...	...	...	3.8	...
Boxelder	4.2	...	...	...	4.2				...
Blackgum	10.5	...	2.6	7.9	...	...	...	...	...
White ash	3.0	...	1.3	...	...	1.7	...	...	...
Other ashes	9.7	...	8.3	1.4	...	...	...	...	...
sycamore	11.2	...	6.0	...	...	...	...	5.2	...
Willow	3.1	...	...	...	...	1.6	...	1.5	...
Black walnut	2.7	...	1.4	...	...	...	1.2	...	...
Black cherry	2.9	...	2.9	...	...	...	...	...	...
American elm	6.8	...	3.6	3.3	...	...	...	...	...
Other elms	23.0	...	13.5	6.0	...	2.0	1.5	...	...
Hackberry	25.2	...	11.8	5.2	4.2	4.1	...	...	...
Other locusts	2.9	...	1.4	1.4	...	...	...	...	...
Total hardwoods	654.9	...	219.9	165.3	90.9	80.0	34.5	54.9	9.4
All species	756.4	27.8	252.2	181.7	105.9	90.0	34.5	54.9	9.4

Table 40.—*Volume of sawtimberfor tree grade 4 on timberland by detailed species and diameter class, northeast Oklahoma counties, 1993*

Species	All classes	Diameter class (Inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	≥29.0
	Million board feet								
Select white oaks	19.6	...	10.5	9.1	...	...	...	...	...
Select red oaks	48.5	...	16.7	19.0	1.8	6.8	...	4.2	...
Other white oaks	65.7	...	31.0	12.1	16.9	5.7	...	...	...
Otherredoaks	207.5	...	65.5	53.9	39.3	18.7	19.6	10.5	...
sweet pecan	2.4	...	2.4	...	...	...	...	...	...
Other hickories	71.1	...	18.3	25.2	13.3	14.2			
Hard maple	4.7	...	1.9		2.8	...	...	...	...
Soft maple	1.9	...	...	...	1.9	...	...	...	...
Blackgum	5.7	...	2.3	2.6			0.8	...	...
Cottonwood	1.4	...	...	...	...	...	...	1.4	...
willow	4.9	...	3.5	1.3			...	...	...
American elm	1.9	...	1.2	0.7	...	...	...	...	...
Other elms	5.5	...	3.3	2.2	...	...	...	...	...
Other locusts	3.0	...	1.8	...	...	1.2	...	...	...
Total hardwoods	443.8	...	158.3	126.2	76.0	46.6	20.5	16.1	...
All species	443.8	...	158.3	126.2	76.0	46.6	20.5	16.1	...

Table 41 .—*Volume of sawtimber on timberland by species and ownership class,* northeast *Oklahoma counties, 1993*

Species	All ownerships	National forest	Other public	Forest industry	Forest industry-leased	Other private
	Million board feet					
Yellow pines	169.1	…	32.5	…	…	136.6
Redcedar	1.5	…	…	…	…	1.5
Total softwoods	170.6	…	32.5	…	…	138.2
Select white-red oaks	346.1	…	103.3	…	…	242.9
Other white–red oaks	784.6	…	35.6	…	…	748.9
Hickory	183.5	…	12.2	…	…	171.2
Hard maple	6.5	…	…	…	…	6.5
Tupelo and blackgum	38.1	…	…	…	…	38.1
Ash-walnut-black cherry	78.5	…	13.8	…	…	64.7
Other hardwoods	255.2	...	22.2	. . . . .		233.0
Total hardwoods	1.692.4	...	187.1	. . . . .		1.505.4
All species	1.863.1	…	219.6	…	…	1.643.5

Table *42.-Average net annual growth, average annual removals, and average annual mortality of live trees by county and species group, northeat Oklahoma counties, 1993*

County	Net Growth			Removals			Mortality		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Million cubic feet								
Adair	3.6	0.7	2.9	5.4	1.9	3.5	2.6	0.2	2.4
Cherokee	6.4	0.9	5.6	5.0	0.1	4.9	2.3	…	2.3
Delaware	5.4	0.3	5.0	0.5	0.1	0.4	1.0	0.1	0.9
McIntosh	2.2	0.2	2.0	0.2	…	0.2	1.7	…	1.7
Mayes	6.3	0.4	5.9	0.4	…	0.4	0.6	0.1	0.6
Muskogee	4.5	…	4.4	1.0	…	1.0	1.0	…	1.0
Ottawa	1.0	…	1.0	0.6	…	0.6	0.3	…	0.3
Sequoyah	4.2	0.2	4.0	0.3	…	0.3	1.0	…	1.0
All counties	33.6	2.6	30.9	13.3	2.1	11.2	10.4	0.3	10.1

Table *43.-Average net annual growth. average annual removals, and average annual mortality of live trees by ownership class and species group, northeast Oklahoma* counties, 1993

Ownership class	Net Growth			Removals			Mortality		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Million cubic feet								
Other public	5.1	0.4	4.8	1.7	...	1.7	0.9	0.1	0.8
Other private	28.4	2.3	26.2	11.6	2.1	9.5	9.5	0.2	9.3
All ownerships	33.6	2.6	30.9	13.3	2.1	11.2	10.4	0.3	10.1

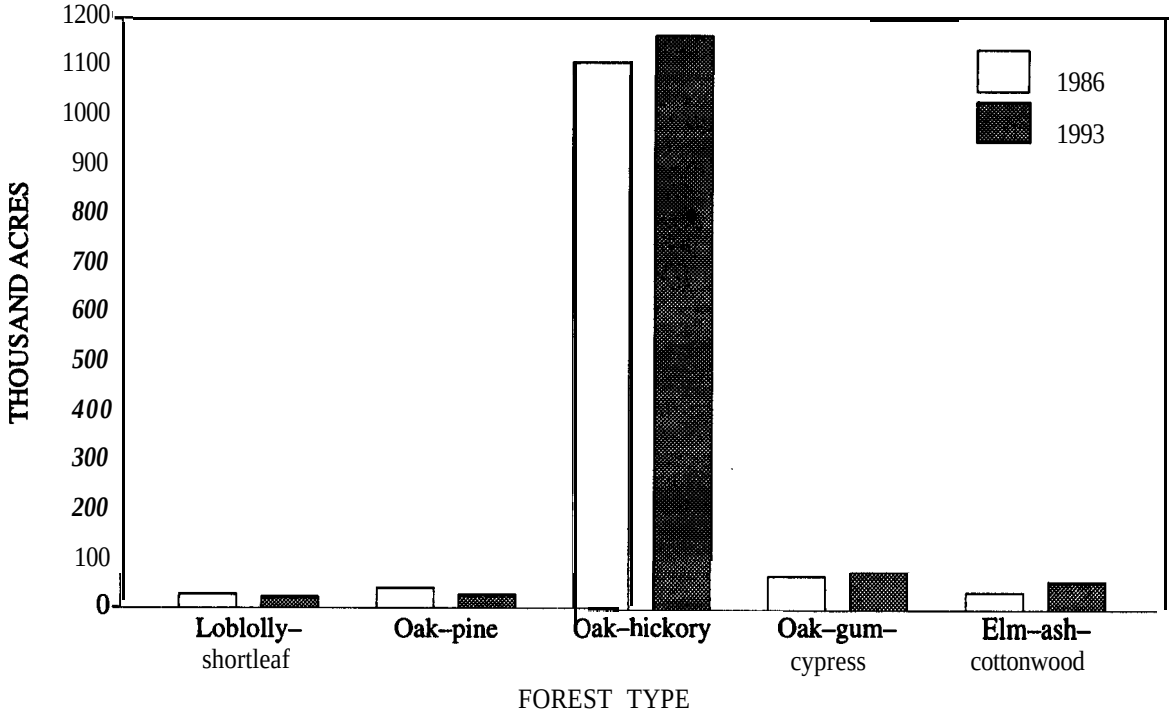

Figure 1 ***.-Area of timberland by forest type, northeast Oklahoma, 1986 and 1993.***

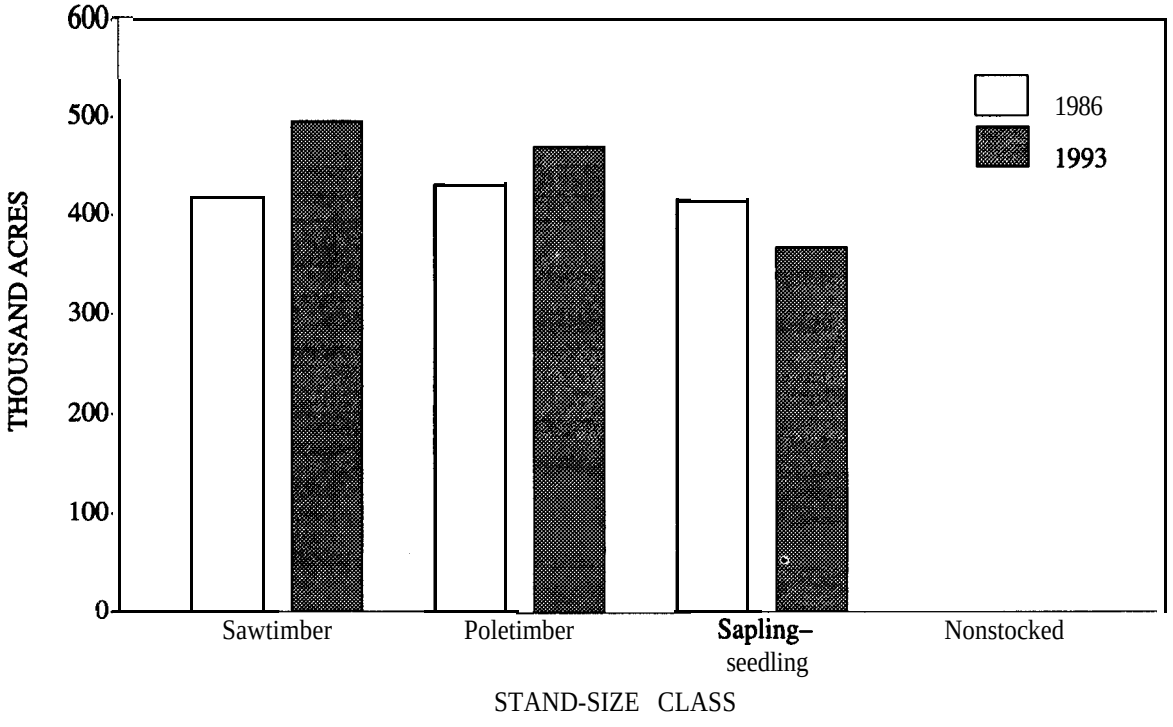

Figure ***2.-Area of timberland by stand-size class, northeast Oklahoma, 1986 and 1993.***

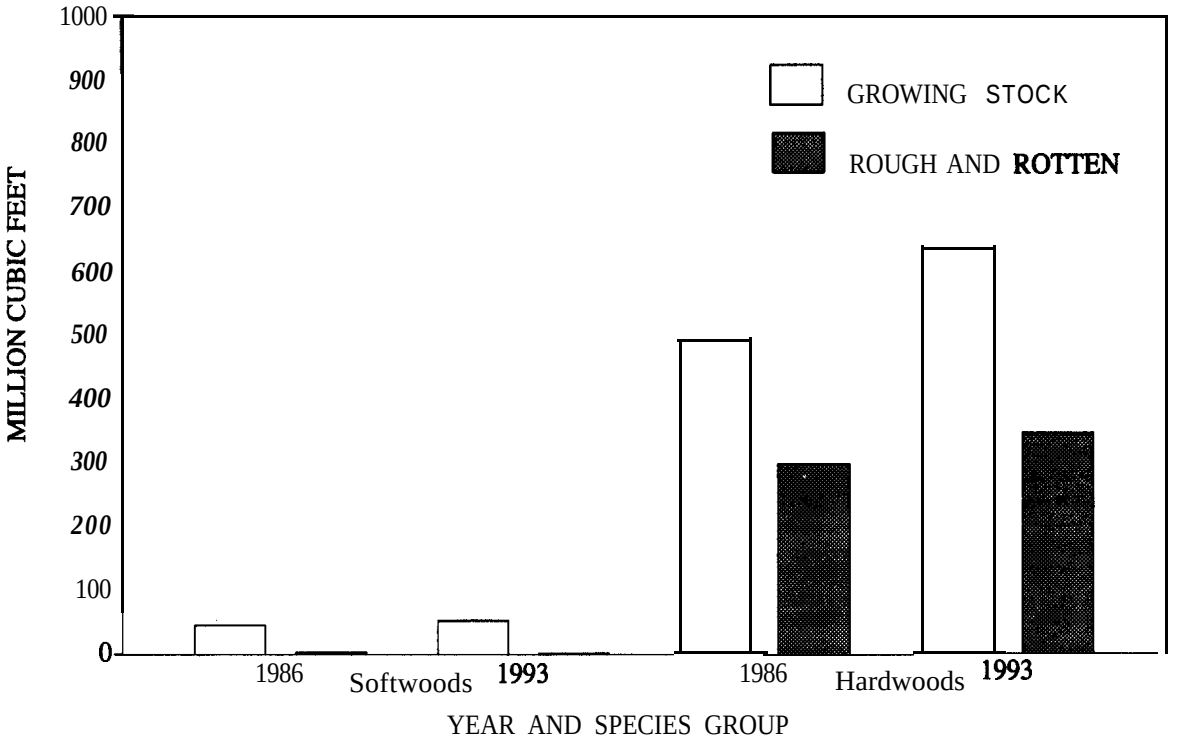

Figure *3.-Volume of live trees on timberland by species group and class of timber, northeast Oklahoma, 1986 and 1993.*

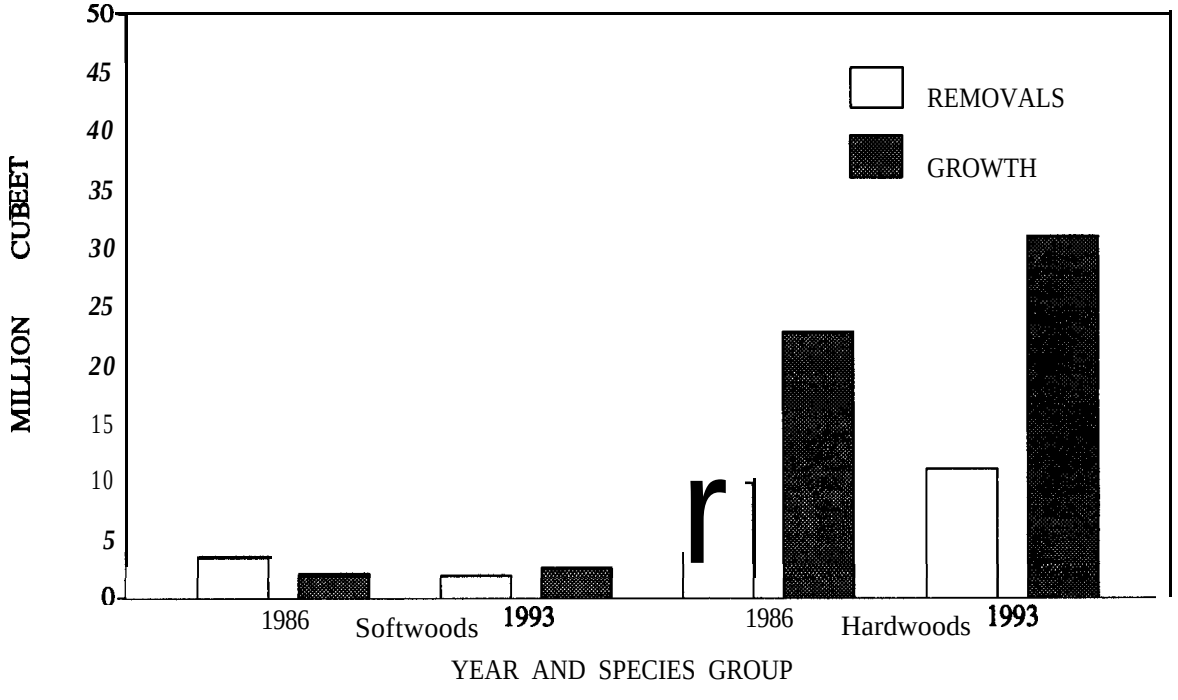

Figure *4.-Average net annual growth and average annual removals of live trees on timberland by species group, northeast Oklahoma, 1986 and 1993.*

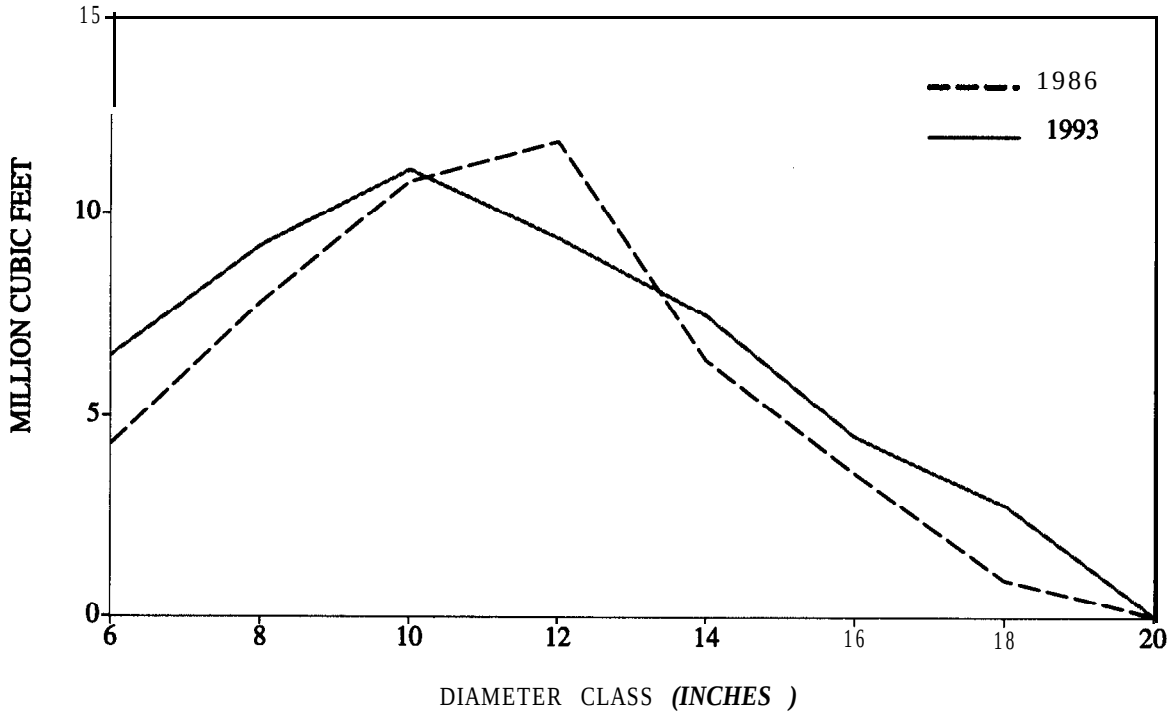

Figure 5.—*Volume of live softwood trees on timberland by diameter class, northeast Oklahoma, 1986 and 1993.*

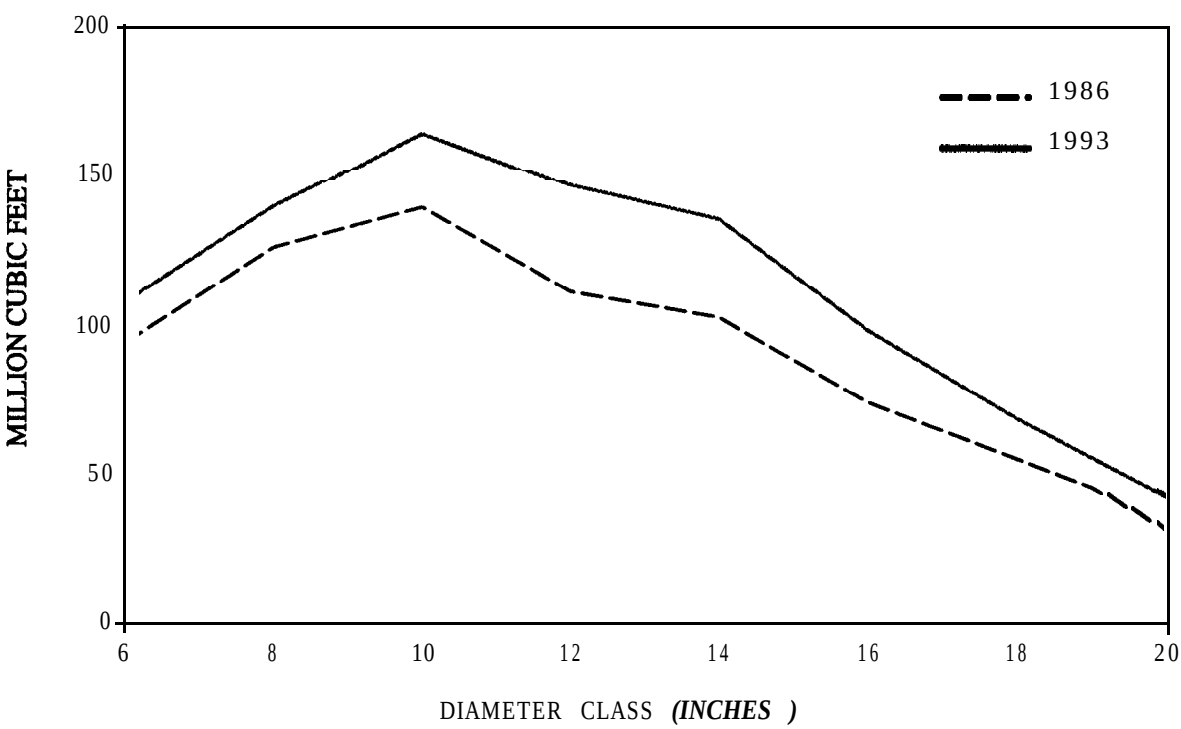

Figure 6.-Volume *of live hardwood trees on timberland by diameter class, northeast Oklahoma, 1986 and 1993.*

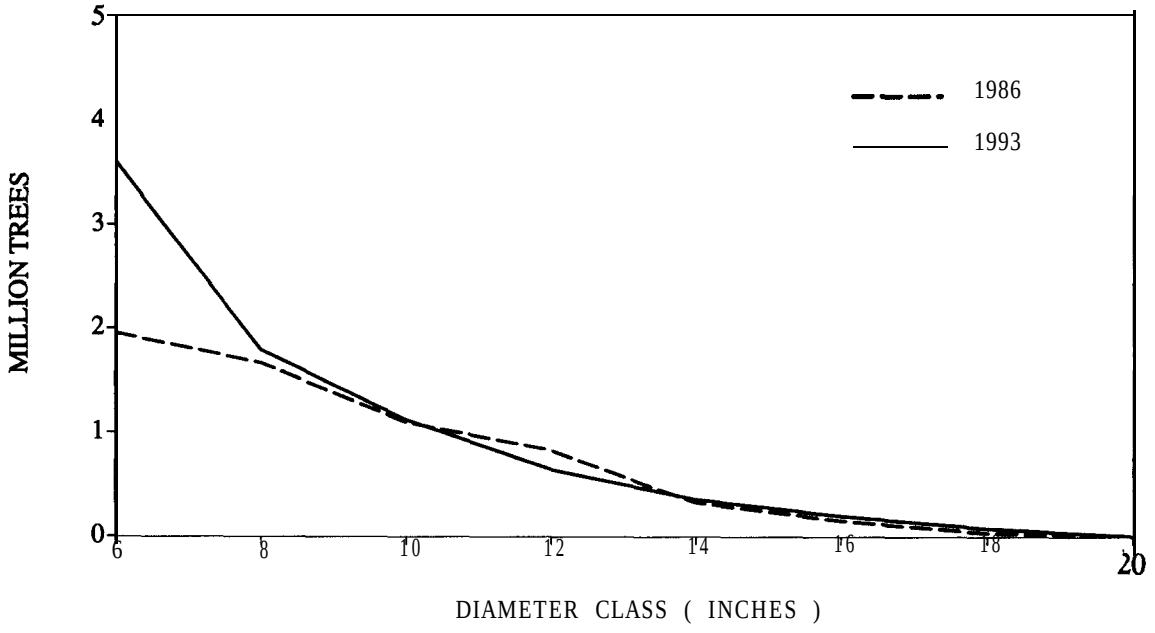

Figure 7.-Number *of live softwood trees on timberland by diameter class, northeast Oklahoma, 1986 and 1993.*

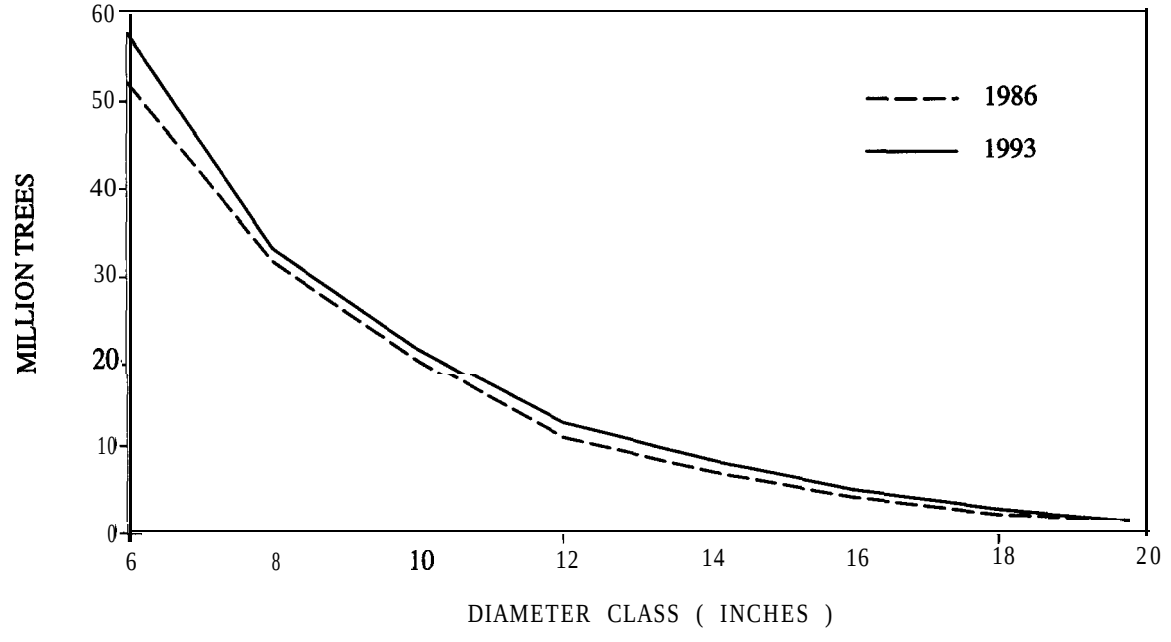

Figure *8.-Number of live hardwood trees on timberland by diameter class, northeast Oklahoma, 1986 and 1993.*

Franco, Peter A.; Miller, Patrick E.; Hartsell, Andrew J. 1992. Forest statistics for northeast Oklahoma counties-1993. Resour. Bull. SO-174. New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station. 30 p.

Tabulates forest resource information from a new inventory of the northeast counties of Oklahoma.

Keywords: Area, forest type, ownership, stand size, volume.